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A TREATISE

ON THE

PREVENTION AND CURE OF DISEASES,

BY

REGIMEN AND SIMPLE MEDICINES.

BY WILLIAM BUCHAN, M. D.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, EDINBURGH, ETC.

REVISED AND ENLARGED,

WITH THE ADDITION OF

A VEGETABLE MATERIA MEDICA,

POINTING OUT THE VIRTUES, PREPARATIONS, AND DOSES, OF OUR MOST VALUABLE
NATIVE MEDICINAL PLANTS,

AND

AN APPENDIX,

ILLUSTRATED WITH EIGHTY-FOUR ENGRAVINGS.

BY J. G. NORWOOD, M. D.

As health is the most precious of all things, and is the foundation of all happiness, the science of preserving life and health is the noblest of all, and most worthy the attention of all mankind.—Hoffman.

CINCINNATI:

PUBLISHED BY J. A. JAMES.

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1841.

SYNOPSIS

OF THE PRINCIPAL SUBJECTS TREATED UPON IN THIS WORK

OBSERVATIONS ON DIET.
REMARKS ON SEDENTARY,
STUDIOUS AND LABORIOUS
OCCUPATIONS.
INFECTION AND CONTAGION.
AFFECTIONS OF THE MIND.
INFLAMMATIONS.
FEVERS.
BILIOUS PLEURISY.
PULMONARY CONSUMPTION.
SMALL POX.
CHICKEN POX.
MEASLES.
SCARLET FEVER.
ST. ANTHONY'S FIRE.
QUINSY.
PUTRID SORE THROAT.
MUMPS.
COUGHS AND COLDS.
WHOOPIING COUGH.
CHOLERA MORBUS
MALIGNANT CHOLERA.
DYSPEPSIA.
HÆMORRHAGIÆ.
DYSENTARY.
WORMS.
JAUNDICE.
DROPSY.
GOUT.
RHEUMATISM.
SCROFULA.
NEGRO CONSUMPTION.
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APOPLEXY.

NERVOUS DISEASES.
MELANCHOLY.
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EPILEPSY.
ST. VITUS' DANCE.
CRAMP OF THE STOMACH.
CANCER.
POISONS.
HYDROPHOBIA.
SURGERY.
DISLOCATIONS.
FRACTURES OR BROKEN BONES.
RUPTURES.
SUSPENDED ANIMATION.
NOXIOUS VAPOURS.
FAINTING FITS.
SUFFOCATION AND STRANGLING.
CONVULSIVE FITS.
LOCK JAW.
WHITE SWELLING.
FELON.
RINGWORM.
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SEATONS AND BLISTERS.
DISEASES OF WOMEN.
MANAGEMENT OF CHILDREN
DISEASES OF CHILDREN.
MATERIA MEDICA.
DISPENSATORY.
MEDICINAL PREPARATIONS.
GLOSSARY.
APPENDIX.

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1841

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PREFACE.

THE great popularity of Dr. Buchan's work, and, consequently, the high value set upon it as a guide in private practice, may be judged of from the fact, that upwards of twenty large editions of it have been published in England, and that it has been translated, by physicians of eminence, into every language of modern Europe. With a few alterations and additions, it also forms the substance of every work on popular medicine which has appeared since the author wrote.

In preparing a new edition for the American public, the attempt has been made, and, it is believed successfully, to continue and increase its claims to confidence, by the addition of a large portion of new and valuable matter, much of it relating to diseases seldom met with in Great Britain, but common in the United States. The various improvements in the treatment of disease, as well as the additions which have been recently made to the *Materia Medica*, particularly of our own country, have been introduced, so far, at least, as they can be made available in private practice. For these purposes, the works of the latest and best American writers have been consulted, and all that was considered obsolete or useless in the original work, has been omitted, to give place to the improvements of modern practice.

Among the American writers whose works have been freely put in requisition on this occasion, may be mentioned, Doctors Rush, Chapman, Caldwell, Cooke, Barton, James, Dudley, Eberle, Short, Drake, Dewees, Yandell, Dunglison, and Cartwright. This acknowledgement is here made, because their observations have been adopted in many instances without an array of quotations; and because their names are a sufficient guaranty that at least a great portion of the additions and alterations are conformable to the present improved state of medical science, and consequently entitled to the highest consideration. The present edition is also indebted to the labors of Cooper, Abernethy, Burns, Mackintosh, Armstrong, Johnson, Thomas, and other English writers, who stand at the head of their profession in their own country, and whose works have been consulted and freely used as occasion required. The object throughout the entire work, being to give the history, characteristic symptoms, progress, and termination of all common diseases, in as correct, simple, and intelligible terms as possible, suited to the capacities of all who ought, in any event, to undertake the treatment of a disease in the termination of which human life may be at stake. In every instance, such liberty has been taken with the text of the author, as to modernize the treatment, and give that only which is adapted to each complaint as it usually appears in the United States.

Among the subjects treated of in this edition, not noticed in the original work, are—*Malignant Cholera, Peripneumonia Notha, Bilious Pleurisy, Varioloid, Vaccination, Chicken Pox, Dyspepsia, Lientery, Negro Consumption, Venereal Diseases*, with their consequences, *White Swelling, Locked Jaw, Prolapsus Ani, Felon, Tetter, Scald-head*, various *Eruptive Diseases, Issues, Setons*, most of the diseases peculiar to *Women and Children*, and those incident to a state of pregnancy. The articles on *Fevers, Dysentery, Diarrhœa*, and several other common diseases have been re-written, and the treatment pursued by the generality of practitioners, and found most successful, particularly in the diseases endemic to the South and West, has been detailed with as much minuteness as the nature of the subject will admit of, and as the object of the work renders desirable.

The work is not intended to induce people to neglect medical assistance, and place too great confidence in their own discrimination; but to enable families to make prompt use of suitable remedies in sudden attacks of illness, and in case of accidents, when the services of a physician cannot be immediately procured. It is also believed, that the physician himself may often find some advantage in having it in his power to consult a work from the family library, and that such a remembrancer may be capable of rendering very material assistance in many cases, especially to those who are of so recent a standing in practice as not yet to have acquired a readiness in discriminating diseases, and of prescribing remedies suitable to their nature and different stages.

Works on Domestic Medicine have generally been decried by the profession, either on the ground that they affect their interest by lessening the number of calls for professional assistance, or that they promote the spread of quackery. Those who oppose them on the first ground, are unworthy an answer; and those who make the last objection, will, by giving the subject a moment's consideration, see, that such publications, when made for the purpose of enlightening mankind, and not for the single purpose of pecuniary emolument, as is the object of too many of them, instead of favoring empiricism, are the only means calculated to check it. The most effectual way to destroy quackery in any art or science, is to diffuse a knowledge of it among mankind. No laws will ever be able to put down the charlatan, while the people ignorantly believe that the quack is as honest a man, and as well qualified as the physician. A very small degree of medical knowledge, however, will be sufficient to break this spell, and nothing else will effectually undermine them. It is the ignorance and credulity of the multitude with regard to medicine, which renders them such an easy prey to every pretender; nor can the evil be remedied by any other means but by making them wiser. Persons who have most knowledge in these matters, are commonly most ready both to ask and follow the advice of a physician, when it is necessary. The ignorant are always most apt to tamper with medicine, or consult quacks, and have the least confidence in physicians. Instances of this are daily to be met with among the less informed, who, while they absolutely refuse to take a medicine which has been prescribed by a physician, will swallow with greediness any thing that is recommended to them by their credulous neighbors. Where men will act even without knowledge, it is certainly more rational to afford them all the light we can, than to leave them entirely in the dark.

The design of the work is very well summed up by the author in the

following sentence : " To assist the well-meant endeavors of the humane and benevolent in relieving distress ; to eradicate dangerous and hurtful prejudices ; to guard the ignorant and credulous against the frauds and impositions of quacks and impostors ; and to show men what is in their own power, both with regard to the prevention and cure of diseases, are certainly objects worthy of the physician's attention. These were the leading views in composing and publishing the following sheets. They were suggested by an attention to the conduct of mankind, with regard to Medicine, in the course of a pretty long practice, during which the author has often had occasion to wish that his patients, or those about them, had been possessed of some such plain directory for regulating their conduct. How far he has succeeded in his endeavors to supply this deficiency, must be left to others to determine : but if they be found to contribute in any measure towards alleviating the calamities of mankind, he will think his labor very well bestowed."

AUTHOR'S PREFACE.

WHEN I first signified my intention of publishing the following sheets, I was told by my friends it would draw on me the resentment of the whole Faculty. As I never could entertain such an unfavorable idea, I was resolved to make the experiment, which indeed came out pretty much as might have been expected. Many whose learning and liberality of sentiments do honor to medicine, received the book in a manner which at once showed their indulgence, and the falsity of the opinion *that every Physician wishes to conceal his art*; while the more selfish and narrow-minded, generally the most numerous in every profession, have not failed to persecute both the book and its author.

The reception, however, which this work has met with from the Public, merits my most grateful acknowledgments. As the best way of expressing these, I have endeavored to render it more generally useful, by enlarging the *prophylaxis*, or that part which treats of preventing diseases; and by adding many articles which had been entirely omitted in the former impressions. It is needless to enumerate these additions; I shall only say, that I hope they will be found real improvements.

The observations relative to Nursing and the Management of Children were chiefly suggested by an extensive practice among infants, in a large branch of the Foundling Hospital, where I had an opportunity not only of treating the diseases incident to childhood, but likewise of trying different plans of nursing, and observing their effects. Whenever I had it in my power to place the children under the care of proper nurses, to instruct these nurses in their duty, and to be satisfied that they performed it, very few of them died; but when, from distance of place, and other unavoidable circumstances, the children were left to the sole care of mercenary nurses, without any person to instruct or superintend them, scarcely any of them lived.

This was so apparent, as with me to amount to a proof of the following melancholy fact; *that almost one half of the human species perish in infancy, by improper management or neglect*. This reflection has made me often wish to be the happy instrument of alleviating the miseries of those suffering innocents, or of rescuing them from an untimely grave. No one, who has not had an opportunity of observing them, can imagine what absurd and ridiculous practices still prevail in the nursing and management of infants, and what numbers of lives are by that means lost to society. As these practices are chiefly owing to ignorance, it is to be hoped, that when nurses are better informed, their conduct will be more proper.

The application of medicine to the various occupations of life has been in general the result of observation. An extensive practice for several years, in one of the largest manufacturing towns in England, afforded me sufficient opportunities of observing the injuries which those useful people sustain from their particular employments, and likewise of trying various methods of obviating such injuries. The success which attended these trials was sufficient to encourage this attempt, which I hope will be of use to those who are under the necessity of earning their bread by such employments as are unfavorable to health.

I do not mean to intimidate men, far less to insinuate that even those arts, the practice of which is attended with some degree of danger, should not be carried on; but to guard the less cautious and unwary against those dangers which they have it in their power to avoid, and which they often, through mere ignorance, incur. As every occupation in life disposes those who follow it to some particular diseases more than to others, it is certainly of importance to know these, in order that people may be upon their guard against them. It is always better to be warned of the approach of an enemy, than to be surprised by him, especially where there is a possibility of avoiding the danger.

The observations concerning Diet, Air, Exercise, &c. are of a more general nature, and have not escaped the attention of Physicians in any age. They are subjects of too great importance, however, to be passed over in any attempt of this kind, and can never be sufficiently recommended. The man who pays a proper attention to these, will seldom need the physician; and he who does not will seldom enjoy health, let him employ as many physicians as he pleases.

In the treatment of diseases, I have been peculiarly attentive to regimen. The generality of people lay too much stress upon Medicine, and trust too little to their own endeavors. It is always in the power of the patient, or of those about him, to do as much towards his recovery as can be effected by the physician. By not attending to this, the designs of Medicines are often frustrated; and the patient, by pursuing a wrong plan of regimen, not only defeats the doctor's endeavors, but renders them dangerous. I have often known patients killed by an error in regimen, when they were using very proper medicines. It will be said the physician always orders the regimen, when he prescribes a medicine. I wish it were so, both for the honor of the Faculty and the safety of their patients; but physicians, as well as other people, are too little attentive to this matter.

Though many reckon it doubtful whether physic is more beneficial or hurtful to mankind, yet all allow the necessity and importance of a proper regimen in diseases. Indeed, the very appetites of the sick prove its propriety. No man in his senses ever imagined that a person in a fever, for example, could eat, drink, or conduct himself in the same manner as one in perfect health. This part of medicine therefore, is evidently founded in Nature, and is every way consistent with reason and common sense. Had men been more attentive to it, and less solicitous in hunting after secret remedies, Medicine had never become an object of ridicule.

This seems to have been the first idea of Medicine. The ancient physicians acted chiefly in the capacity of nurses. They went very little beyond aliment in their prescriptions; and even this they generally administered themselves, attending the sick for that purpose through the whole course of the disease; which gave them an opportunity, not only

of marking the changes of diseases with great accuracy, but likewise of observing the effects of their different applications, and adapting them to the symptoms.

To render this book more generally useful, however, as well as more acceptable to the intelligent part of mankind, I have in most diseases, besides regimen, recommended some of the most simple and approved forms of medicine, and added such cautions and directions as seemed necessary for their safe administration. It would no doubt have been more acceptable to many, had the book abounded with pompous prescriptions, and promised great cures in consequence of their use; but this was not my plan: I would much rather teach men how to avoid the necessity of using them, than how they should be used.

Several medicines, and those of considerable efficacy, may be administered with great freedom and safety. Wherever I was convinced that medicine might be used with safety, or where the cure depended chiefly upon it, I have taken care to recommend it; but where it was either highly dangerous, or not very necessary, it is omitted.

I know some of the Faculty disapprove of every attempt of this nature, imagining that it must totally destroy their influence. But this notion appears to me to be as absurd as it is illiberal. People in distress will always apply for relief to men of superior abilities, when they have it in their power; and they will do this with greater confidence and readiness when they believe that Medicine is a rational science, than when they take it to be only a matter of mere conjecture.

Though I have endeavored to render this Treatise plain and useful, yet I found it impossible to avoid some terms of art; but those are in general either explained, or are such as most people understand. In short, I have endeavored to conform my style to the capacities of mankind in general; and, if my readers do not flatter either themselves or me, with some degree of success. On a medical subject, this is not so easy a matter as some may imagine. To make a show of learning, is easier than to write plain sense, especially in a science which has been kept at such a distance from common observation. It would, however, be no difficult matter to prove, that every thing valuable in the practical part of medicine is within the reach of common abilities.

It would be ungenerous not to express my warmest acknowledgments to those Gentlemen who have endeavored to extend the usefulness of this Performance, by translating it into the language of their respective countries. Most of them have not only given elegant translations of the Book, but have also enriched it with many useful observations; by which it is rendered more complete, and better adapted to the climate and the constitutions of their countrymen. To the learned Dr. Duplanil of Paris, physician to the Count d'Artois, I lie under particular obligations; as this Gentleman has not only enlarged my treatise, but by his very ingenious and useful notes, has rendered it so popular on the Continent, as to occasion its being translated into all the languages of modern Europe.

I have only to add, that the book has not more exceeded my expectation in its success than in the effects it has produced. Some of the most pernicious practices, with regard to the treatment of the sick, have already given place to a more rational conduct; and many of the most hurtful prejudices, which seemed to be quite insurmountable, have in a great measure yielded to better information.

DOMESTIC MEDICINE.

PART I.

OBSERVATIONS ON DIET.

No creature eats such a variety of food as man. Intended for an inhabitant of every climate, he devours the productions of them all ; and if they do not suit his palate, or agree with his stomach, he calls in the aid of cookery, an art peculiar to himself ; by which many things that, in a crude state, would prove hurtful, or even poisonous, are rendered wholesome and salutary.

The obvious division of food is into animal and vegetable. To say that man was intended by nature for using either the one or the other alone, would be absurd. His structure and appetite prove that he was formed for both. Judgment, however, is requisite in adjusting the due proportion of each, so as to avoid the inconveniences arising from an extreme on either hand.

Though animal food is more nourishing than vegetable, it is not safe to live on that alone. Experience has shown that a diet, consisting solely of animal food, excites thirst and nausea, occasions putrescence in the stomach and bowels, and finally brings on violent griping pains, with cholera and dysentery.

Animal food is less adapted to the sedentary than the laborious, and least of all to the studious, whose diet ought to consist chiefly of vegetables. Indulging in animal food renders men dull, and unfit for the pursuits of science, especially when it is accompanied with the free use of strong liquors.

The plethoric, or persons of a full habit, should eat sparingly of animal food. It yields far more blood than vegetables taken in the same quantity, and, of course, may induce inflammatory disorders. It acts as a stimulus to the whole system, by which means the circulation of the blood is greatly accelerated.

I am inclined to think that consumptions, are in part owing to the great use of animal food. Though pulmonary consumption is

not, properly speaking, an inflammatory disease, yet it generally begins with symptoms of inflammation, and is often accompanied with them through its whole progress.

Improper diet affects the mind as well as the body. The choleric disposition of the English is almost proverbial. Were I to assign a cause, it would be, their living so much on animal food. There is no doubt that this induces a ferocity of temper unknown to men whose food is taken chiefly from the vegetable kingdom.

Though these and similar consequences may arise from the excess of animal diet, we are far from discouraging its use in moderation. In all cold countries it is certainly necessary; but the major part of the aliment ought, nevertheless, to consist of vegetable substances.

With regard to the proportion of vegetable food to that of animal, great nicety is by no means required. It must vary according to circumstances, as the heat of the weather, the warmth of the climate, and the like. The vegetable part, however, where nothing forbids, ought certainly to preponderate, and I think in the proportion at least of two to one.

I am no enemy to good fruit, as an article of diet; but the greater part of what is used is mere trash. Fruit should be eaten in the early part of the day, when the stomach is not loaded with food, and it never ought to be eaten raw till it is thoroughly ripe.

Of Bread.—Bread, or something resembling it, makes a part of the diet of all nations. Hence it is emphatically denominated *the staff of life*. It may, however, be used too freely. The late Dr. Fothergill was of opinion, and I perfectly agree with him, that most people eat more bread than is conducive to their health. I do not mean to insinuate that bread is unwholesome, but that the best things may prove hurtful when taken to excess. A surfeit of bread is more dangerous than one of any other food. The French consume vast quantities of bread; but its bad effects are prevented by their copious use of soups and fruits.

One important use of bread is to form a mass fit for filling up the alimentary canal, and carrying the nutritious juices along that passage in such a state as to render them fit to be acted upon by the lacteal absorbents, which take up the nourishment, and convey it to the blood. In this light, bread may be considered as a soil from whence the nourishment is drawn. I do not say that bread contains no nourishment, but that its use, as an article of diet, does not solely depend on the quantity of nutriment it contains, but in

some measure on its fitness as a vehicle for conveying the nutritious particles through the intestinal tubes. Hence it follows, that the finest bread is not always the best adapted for answering the purposes of nutrition.

The richest food will not nourish an animal, unless the alimentary canal is sufficiently distended. A dog has been fed on the richest broth, yet could not be kept alive ; while another, which had only the meat boiled to a chip, and water, thrived very well. This shows the folly of attempting to nourish men on alimentary powders and other concentrated food.

The great art, therefore, of preparing food, is to blend the nutritive part of the aliment with a sufficient quantity of some light farinaceous substance, in order to fill up the canal, without overcharging it with more nutritious particles than are necessary for the support of the animal. This may be done either by bread, or other farinaceous substances, of which there is a great variety, as will appear from the sequel.

People imagine, as the finest flour contains the greatest quantity of nourishment, that it must therefore be the most proper for making into bread ; but this by no means follows. The finest flour comes the nearest to starch, which, though it may occasionally prove a good medicine, makes bad bread. Household bread, which is made by grinding down the whole grain, and only separating the coarser bran, is, without doubt, the most wholesome.

Bread is often spoiled to please the eye. The artificially whitened, drying, stuffing bread, though made of the heart of the wheat, is, in reality, the worst of any ; yet this is the bread which most people prefer.

All the different kinds of grain are occasionally made into bread, some giving the preference to one and some to another, according to early custom and prejudice. The people of South Britain generally prefer bread made of the finest wheat-flour, while those of the northern countries eat a mixture of flour and oatmeal, or rye-meal, and many give the preference to bread made of oatmeal alone. The common people of Scotland also eat a mixed bread, but more frequently bread of oatmeal only. In Germany the common bread is made of rye, and the American thinks no bread so strengthening as that which is made of Indian corn ; nor do I much doubt but the Laplander thinks his bread made of the bones of fishes is the best of any.

Bread made of different kinds of grain is more wholesome than what is made of one only, as their qualities serve to correct one

another. For example, wheat flour, especially the finer kind, being of a starchy nature, is apt to occasion constipation. Bread made of rye-meal, on the other hand, proves often too slippery for the bowels. A due proportion of these makes the best bread.

For the more active and laborious I would recommend a mixture of rye with the stronger grains, as peas, beans, barley, oats, Indian corn, and the like. These may be blended in many different ways : they make a hearty bread for a laboring man, and, to use his own language, they lie longer on his stomach than bread made of wheat-flour only. Barley-bread passes too quickly through the alimentary canal to afford time for conveying the proper nourishment ; but bread made of barley mixed with peas is very nourishing.

A great part of the bread consumed in every country is by children. It is always ready, and when the child calls for food, a piece of bread is put into its hand to save the trouble of dressing any other kind of victuals. Of many children this is the principal food, but it is far from being the most proper. Children are often troubled with acidities of the stomach and bowels ; and it is well known that bread mixed with water, and kept in a degree of heat equal to that of the human stomach, soon turns sour.

[Of the two kinds of bread, the unleavened (a simple mixture of meal and water) is preferable, if prepared from the *unbolted* flour ; but that made with the fine white flour, such as crackers and pilot bread, is always of a viscid indigestible nature, unless mixed with butter or lard to render it more friable and porous, in which case it is still more prejudicial. Bread should not be eaten until it is at least twelve hours old.

“New bread,” says Dr. Turnbull, “contains much indigestible paste ; and its fixed air, not being entirely expelled, becomes extracted in the stomach, and produces flatulence, cramp, and indigestion. This effect is easily prevented, either by keeping the bread till stale, or toasting it.” “Hot bread is not so healthy as cold, being more indigestible, and very apt to clog and oppress many people’s stomachs.”—(*Rickeson*.) “Bread,” says Dr. Paris, “should never be eaten *new* ; in such a state it swells, like a sponge, in the stomach, proving very indigestible. Care should also be taken to obtain bread that has been duly baked. Unless all its parts are intimately mixed, and the fixed air expelled, it will be apt, in very small quantities, to produce acescency and indigestion.” Dr. Willich says, “New baked bread always contains much of an indigestible paste ; which is remedied, either by allow-

ing it to dry for two or three days, or by toasting it. Stale bread, in every respect, deserves the preference; and persons troubled with flatulency, cramp of the stomach, and indigestion, should not, upon any account, eat *new* bread, and, still less, *hot rolls* and *butter*." Many years' close observation, led Dr. Mease to the conclusion, that—"During the years of youth, when the natural vigor of the stamina is daily deriving an accession of strength,—or, in constitutions enjoying greater powers of the stomach than are absolutely required for the purposes of digestion, fresh bread may be eaten with impunity for years; but I will venture to assert, (says he,) that every meal, in which it is taken, will detract some little from the powers of that organ; and that, in time, it will show its effects."]

Boiled Grain.—Though farinacious substances, of one kind or another, make a necessary part of the food of man, yet there can be no reason why such substances should always assume the name and form of bread. Many of them are more wholesome, and not less agreeable, in other forms. Bread is often used merely to save the trouble of cookery; and, being portable, is the most convenient article of diet for carrying abroad.

It does not, however, admit of a doubt, that more grain is eaten boiled than is made into bread; and that this mode of cookery is the most wholesome. Simple boiling precludes all adulteration, and is an operation much less laborious and artificial than baking.

The most general article of diet among mankind is rice. This may be made into a variety of dishes; but simple boiling is all that is required, to render it a proper substitute for bread. It may either be eaten alone, or with milk. In the east, it is used with meat, in the same manner as we do bread. The people of this country believe that rice proves injurious to the eyes; but this seems to be without foundation, as it has no such effect on those who make it the principal part of their food.

Many other kinds of grain will, when boiled, make good substitutes for bread. Even those which make a harsh and unpleasant sort of bread, are often rendered very palatable by boiling. This is the case with all the leguminous class of plants, as peas and beans. Even oats and barley are more agreeable, as well as more wholesome, when boiled, than made into bread.

All allow that peas and beans, boiled, when young, are a great luxury; but when old, they are equally wholesome, and when properly cooked, by no means unpleasant. There are few who

do not relish peas-pudding, and even prefer it to bread. Beans are not so fit for this purpose; but they make an excellent ingredient in broth, and whoever eats this broth will find little occasion for bread.

Peas and beans contain an equal quantity of sugar with wheat, oats, or barley, and at the same time a greater proportion of oil, consequently are more nourishing. This fact is confirmed by daily experience.

Nature seems to have pointed out the propriety of the extensive use of peas and beans; it being a fact, that when crops of that kind are duly alternated with crops of wheat, barley, or oats, the fertility of the soil may be maintained, without rest or manure, for many years together. Whereas, if the latter be raised on the same soil for several years successively, they render it barren, so that, without rest or manure, its fertility cannot be preserved.

Barley is one of the best ingredients in soup. Count Rumford says, it possesses the quality of lithing, or thickening, soups, in a superior degree to any other grain. We have reason, however, to believe that grits, or coarse oatmeal, will answer that purpose still better.

Oatmeal is frequently made into bread; but it is a much more wholesome, as well as agreeable food, when made into hasty-pudding, and eaten with milk.

The opinion of oatmeal being heating, and occasioning skin diseases, is wholly without foundation. Bread made of oatmeal, when not leavened, will sometimes occasion the heart-burn; but this is no proof of its heating quality. Unleavened bread, of wheat or any other grain, produces the same effect on a debilitated stomach. Oatmeal thoroughly boiled seldom gives the heart-burn.

Persons who are fed on oatmeal-bread, or hasty-pudding, are not more subject to diseases of the skin, than those who live on wheat-meal. Cutaneous disorders proceed more from the want of cleanliness, than from any particular aliment.

A lieutenant of the army, residing at a country village within a few miles of Edinburgh, with a wife and ten children, having no other income than his half-pay, fed the whole of his children with hasty-pudding and butter-milk only, from a conviction that it was the most wholesome and full diet that fell within the reach of his narrow circumstances. They grew apace; and it was the universal remark of the neighborhood, that they were as sprightly, healthy, and robust, as other children, and at the same time perfectly free from all skin-diseases.

Children are seldom well, unless when their bodies are gently open. But this is more likely to be the case when fed on oatmeal and milk, than with a starchy substance made of the finest flour; yet this is the common food of children.

The American, the Italian, and the German, all cook Indian corn, in the same way as the North Briton does his oatmeal, by making it into hasty-pudding. It may be eaten in a variety of ways. Some eat it with a sauce composed of butter and brown sugar, or butter and molasses. Others eat it with milk only. In either way it makes a good, cheap, and wholesome diet, by no means disagreeable to those who are accustomed to it.

The only other grain we shall mention, as best when boiled, is buck-wheat: it is of a very mucilaginous nature, and, of course, highly nutritious. In several parts of Europe it constitutes a principal part of the food of the lower people. In former times it was eaten in Russia; not by the lower classes only; even the nobility made use of it. Boiled, and then buttered, it was such a favorite of the great Czar Peter, that he is said seldom to have supped on any thing else.

Butter.—Butter, though a good article of diet, may be used too freely, and in this country, I am convinced, that is the case. To weak stomachs it is hurtful, even in small quantities, and when used freely it proves prejudicial to the strongest.

Butter, like other things of an oily nature, has a constant tendency to turn rancid. This process, by the heat of the stomach, is greatly accelerated, insomuch that many people, soon after eating butter, complain of its rising in their stomachs, in a state highly disagreeable. Oils of every kind are with difficulty mixed with watery fluids. This is the reason why butter floats in the stomach, and rises in such an unpleasant manner.

Persons afflicted with bile should use butter very sparingly. Some sceptical authors doubt whether or not aliment of any kind has an effect on the bile. One thing, however, is certain, that many patients, afflicted with complaints which were supposed to be occasioned by bile, have been completely cured by a total abstinence from butter.

The most violent bilious complaints that I ever met with, were evidently occasioned by food that became rancid on the stomach, as the cholera morbus, and the like. Nor can such complaints be cured, till the rancid matter is totally evacuated by vomiting and purging.

But supposing butter did not possess the quality of becoming rancid on the stomach, it may, nevertheless, prove hurtful to digestion. Oils of all kinds are of a relaxing quality, and tend to impede the action of digestion. Hence the custom of giving rich broths and fat meats to persons who have a voracious appetite.

The free use of butter, and other oily substances, not only tends to relax the stomach and impede its action, but to induce a debility of the solids, which paves the way to many maladies.

Children, without exception, are disposed to diseases arising from relaxation. Butter, of course, ought to be given to them with a sparing hand. But is this the case? By no means. Bread and butter constitute a great part of the food of children, and I am convinced that the gross humors with which they are frequently troubled are partly owing to this food. As children abound with moisture, bread alone is, generally speaking, better for them than bread and butter.

Oils, in certain quantities, excite nausea, and even vomiting. They must, of course, prove unfriendly to digestion. A Dutch sailor, we are told, can digest train oil. So may any sailor; but it would be very improper food for a lady.

To some of the leaner farinacious substances, as the potato, butter makes a very proper addition; but eating it to flesh and fish, of almost every description, is certainly wrong. The meat eaten in this country is generally fat enough without the addition of butter; and the more oily kinds of fish, as salmon or herrings, are lighter on the stomach, and easier digested, when eaten without it.

Butter is rather a gross food, and fitter for the athletic and laborious, than the sedentary and delicate. It is less hurtful when eaten fresh than salted. Salt butter certainly tends to induce skin-diseases, and I am inclined to think, the free use of it at sea may have some share in bringing on that dreadful malady, so destructive to sailors, *the sea-scurvy*.

There is a method of rendering salt butter less hurtful, but it seems not to be generally known. What I mean is, to mix it with an equal quantity of honey, and keep it for use. In this way it may be given to children with greater freedom.

Butter, in itself, is not near so hurtful, as when combined with certain other things. For example: bread made with butter is almost indigestible, and pastries of every kind are little better; yet many people almost live upon pastry, and it is universally given to children. It is little better, however, than poison, and never fails to disorder their stomachs.

I have known a man seemingly in perfect health, who, by eating a pennyworth of pastry, as he passed along the street, was seized with such an asthmatic-fit, that he was obliged to be carried home, and had nearly lost his life. This occurred whenever he inadvertently ate any thing baked with butter.

Every thing that proves very injurious to health, ought, as far as possible, to be prohibited. A duty on pastry would be serving the public in more respects than one. It would save many lives, and lessen some tax on necessities.

Cheese, as a diet, is likewise injurious to health. It should never be eaten but as a dessert. It occasions constipation, and excites a constant craving for drink. It is very improper for the sedentary, and hardly to be digested even by the athletic.

If men will live on dry bread, poor cheese, salt butter, broiled bacon, and such like parching food, they will find their way to the ale-house, the bane of the lower orders, and the source of half the beggary in the nation.

Fruits and Roots.—Fruits and roots form a large class of the substitutes for bread. The latter, being produced under-ground, are less liable to suffer from the inclemency of the seasons than grain.

In warm climates the inhabitants have many substitutes for bread: and as their seasons are more uniform than ours, they can generally depend on the plant, or whatever it is, proving productive. The plantain-tree, commonly called the Indian fig, which has from time immemorial been cultivated in South America, bears fruit of a sweetish taste, which will dissolve in the mouth without chewing. It is eaten either raw, fried, or roasted. When intended to supply the place of bread, it is gathered before it is ripe, and eaten either boiled or roasted. The banana is nearly of the same nature, but its fruit is greatly superior both in taste and flavor.

The inhabitants of the South Sea, or Ladrone islands, are supplied with bread from a tree, which has lately been imported into the West India islands, and will, it is hoped, be found to answer the same purpose there. It has a slight degree of sweetness, but not much flavor. It resembles new bread, and requires to be roasted before it is eaten. Those who have tasted it, say, that it is in no respect superior to the potato.

In some of the West India islands the inhabitants supply the place of grain by making bread from the root of a shrub, called the cassada, or cassava.

But the most general substitutes for bread in the West Indies are the yams. There are three different species of this plant, the roots of which are promiscuously used for bread. They are said to be very nutritious, of easy digestion, and when properly dressed, are by some preferred to the best wheaten bread. The taste is somewhat like the potato, but more luscious. The negroes generally eat them boiled, and beaten into a mash. The white people have them ground into flour, and make bread and puddings of them. They can be preserved for several seasons, without losing any of their primitive goodness.

Of all the substitutes for bread in Europe, the potato is the most extensively useful. As this plant thrives in every soil, and seldom suffers from an inclemency of seasons, we must blame ourselves if we suffer a famine to exist. Indeed no such thing ever can be, where due attention is paid to the culture of potatoes. A far greater quantity of farinacious food can be raised on an acre of ground planted with potatoes, than sown with any kind of grain. It is not uncommon to have a return of forty for one. They are not so hearty a food as corn, but no man will ever perish of hunger who can have potatoes.

Potatoes abound with an insipid juice, which induces some to think that they are not very nutritious. Facts, however, are against this opinion. Some of the stoutest men, we know, are brought up on milk and potatoes. Dr. Pearson, who has bestowed some pains in analyzing this root, says, that potatoes and water alone, with common salt, can nourish men completely. They differ in color and consistence, but not materially with regard to their nutritive qualities.

Some think the firm kind are the most nutritious; but the Irish, who must be good judges, give the preference to the mealy. The difference, however, depends much on the mode of cooking them.

More than half the substance of potatoes consists of water, and experience shows, that the mode of cooking, which most diminishes the moisture is to be preferred.

They are dressed in a variety of ways, but simple boiling or roasting seems to be all the cooking they require, to render them a proper substitute for bread. Some are fond of making bread of them. This, in my opinion, is marring both. Why manufacture any thing into bread, which requires only the aid of fire to make it such? Nobody thinks of making dough of the bread-fruit; but the potatoe might with as great propriety be called the bread-root, as it is made into bread by the same process.

When potatoes are used in broths or stews, they ought previously to be boiled, and the water thrown away, as it contains something deleterious. Simple boiling or roasting is sufficient to prepare potatoes to supply the place of bread, but when they are intended to serve as a meal, they require something of a softening nature, as milk, butter, or broth. [The process of mashing them, certainly, does not contribute to their digestibility. By such a process they are not so intimately mixed with the saliva: and when they are impregnated with the fat of roast meat, they should be studiously avoided.] Horses are sometimes fed with potatoes, and become very fond of them. With the addition of a small quantity of hay, they are found to be sufficiently nourishing.

Some think that the potato, unless it be made into bread, will not keep. An accident taught me the contrary. Many years ago a friend of mine sent me a potato, after it had been roasted in an oven, on account of its singular figure. I laid it on a shelf among some other things of the like kind, and was surprised, on removing them many years after, to find the potato quite fresh, though as dry as a bone. On grating it down, it was perfectly sweet; and as fit for making soup as the day it was roasted. I apprehend that nothing made into bread would have kept so long.

Many other domestic roots, sprouts, &c. are very wholesome, and may occasionally supply the place of bread. Of these Mr. Bryant reckons above forty; but we shall only take notice by way of specimen, of the most useful and productive. It is worthy of remark, that no nation can be very populous, which does not draw a great part of its food from under-ground.

The Jerusalem artichoke is a native of Brazil, but having been long cultivated in this country, it is too well known to need any description. From its taste, which is like that of artichoke-bottoms, it would seem to be nutritious, and is far from being unpleasant to the palate. Some reckon it windy, but this may be corrected in the cooking, by warm spices; and as the plant is very productive, we would recommend it to be used in the same manner as potatoes, and the other farinacious roots.

Of the esculent roots in this country, the parsnip is reckoned the most nourishing. It is likewise of easy digestion, and is agreeable to most palates. Some, indeed, dislike it on account of its sweetness; but that is a proof of its nutritive quality, sugar being the most nourishing thing in nature.

There is not any plant that affords a more striking proof of the benefits of culture than the turnip. In its wild state it is good for

little or nothing; but when properly cultivated, it not only affords wholesome nourishment for man, but furnishes the principal winter food for cattle. There is a species of this plant called the yellow turnip, which is sweet, and of a superior quality. The yellow turnip is the most nourishing, and also the most hardy in sustaining the winter. It is eaten with milk to cure the consumption and scurvy. Margraaf says, he could extract no sugar from the turnip, which affords ground to conclude, that it is not so nutritive as certain other roots. "It ought to be well boiled, and the watery parts separated by pressure." Not only the root of the turnip, but the tops, when young, make very pleasant greens. The sprouts, if gathered when very tender, make an excellent salad.

The carrot, like the turnip, is good for little in its natural state, being small, tough, and stringy. Manured, it grows large, succulent, and of a pleasant flavor. It ought, however, to be eaten young, otherwise it lies on the stomach, and is hard of digestion. It is an ingredient in several soups, and, being solid, may in some measure supply the place of bread.

Salsafy, skirrets, and the several kinds of beets, are all pleasant and nourishing. They are likewise of easy digestion, and may be dressed in a variety of ways. Margraaf has, by experiments, discovered, that both skirrets and beets contain a considerable quantity of sugar.

The onion, we are told, was a great favorite in Egypt four thousand years ago, and Dr. Hasselquist says, it is not to be wondered at, for whoever has tasted the onions of Egypt must allow that none can be better in any part of the globe. There, he says, they are sweet, though in many countries they are strong and nauseous. There they are soft, whereas in northern countries, they are hard, and their coats so compact, that they are difficult to digest. This very quality may, however, recommend them in countries where food is scarce. The Doctor observes, that the Turks eat them roasted with their meat as we do bread, and are so fond of them that they wish to be indulged with this dish in Paradise.

From the Doctor's account one would be induced to believe that the onion used in Egypt was of a different species from ours; but I am rather inclined to think it may depend on the mode of culture, as well as on the warmth of the climate and the difference of soil, as we find in the southern parts of Europe they are milder than in the more northerly. In Spain they are very mild, and a root weighing two pounds will grow from a single seed.

Onions are dressed in a variety of ways, but, in regard to wholesomeness, there is no method better than simple boiling. By this method of cooking they are rendered mild, of easy digestion, and go off without leaving any disagreeable heat on the stomach or bowels. Many shun them on account of the strong disagreeable smell they communicate to the breath. Mr. Bryant says, this may be remedied, by eating a few raw parsley leaves a short time after, which will effectually overcome the scent of the onions, and likewise cause them to sit more easy on the stomach.

The leek is generally reckoned among pot-herbs; but as the root is the part chiefly used, the consideration of it comes under the present head of discussion. Indeed it is properly a root as the onion, which grows chiefly above ground. The leek, as well as the onion, is said to be a constant dish at the table of the Egyptians, who chop them small, and eat them with their meat.

The leek is used as a pot-herb in most parts of Britain, especially in Wales, where the natives are said to be fond of it. In Scotland a full grown fowl and small piece of salt beef, stewed with a large quantity of leeks, is a very favorite dish. In my opinion the leek is not so generally used any where as it deserves to be. There is no ingredient that goes into soup that is more wholesome, or that gives it a better flavor, than leeks. They are in many respects medicinal, and, to my taste, as an ingredient in soups, they are greatly superior to the onion or any other pot-herb whatever.

[“All the varieties of the radish have a pungent and acrid taste, in consequence of a peculiar stimulating matter, which resides in the cortical part of the root. They may be said to contain little else than water, woody fibre, and acrid matter, and cannot, therefore, be very nutritive.”]

“Some herbs are still eaten in a raw state, but they are far less digestible than when cooked. During the heats of summer they are refreshing, and are well calculated to assuage that febrile state which full meals of animal food are known to occasion. Of all these herbs, the water-cress is the most beneficial; for, by operating in some degree as an aromatic, it promotes digestion, and corrects that tendency to flatulency which other raw vegetables are apt to produce. Cucumbers are by far the most unwholesome of all raw vegetables, and should be avoided as a poison, especially by dyspeptics. The lettuce is generally eaten in the form of a salad, dressed with oil and vinegar, which is the best mode of preparing it. Those, however, who eat it for the purpose of obtain-

ing its narcotic influence, should eat it without vinegar, as that acid destroys the narcotic principle, which it naturally possesses in an eminent degree.”]

It is a fact worthy of observation, that the boiling of vegetable substances thoroughly, extricates a considerable quantity of air, and makes them less liable to produce flatulency.

I could mention many more esculent plants, which might occasionally supply the place of bread, but the above specimen is sufficient to show how liberal nature is in supplying man with food, provided he will take the trouble of cultivating and cooking it. Mr. Bryant, in his history of esculent plants, enumerates above four hundred and fifty, each of which affords a wholesome nourishment, and may occasionally be used in the place of bread.

Broths and Soups.—These may likewise be considered as substitutes for bread. If properly made, they will serve both for bread and drink. Though broth is a dish of the greatest antiquity, and may be considered as extremely delicious, yet it is not a favorite in this country. Here the people are fond of what they call solids; yet those very solids, they make into broth, by swallowing as much drink after them as they can get.

This kind of diet not only saves bread but drink. The laborer who lives on hasty-pudding and soups, seldom has occasion for drink; while he who is burnt up with dry bread and cheese, or salt meat boiled, has a continual thirst, and spends the greater part of his earnings in liquor. This, by acting as a powerful stimulus, may make him do more work for some time, but it generally cuts him off in the middle of his days. The laborer, who works hard and drinks hard, seldom lives long, and is an old man when he should be in his prime.

The roasting of meat is a wasteful mode of cookery, which ought to be avoided, as much of the substance, and the most nutritive parts, are lost by scorching and what flies off by evaporation.

Broth is not only a dish of great antiquity, but one that can be made in a great variety of ways. It receives into its composition animal and vegetable substances of every kind that are used in diet, and it may be seasoned so as to suit every palate. Indeed people early accustomed to eat broths properly made, are generally fond of them for their whole lives.

What parents love themselves, they generally give to their children, without any regard to its being proper for them or not. I have seen a father, who was fond of strong beer, make his son, an

infant, guzzle it at every meal; and the mother, who delights in tea, does not fail to give it to her daughter whenever she takes it herself. By this conduct the son becomes a tippler, and the daughter sips tea in place of solid food, until she is eaten up with vapors and other nervous disorders.

Count Rumford says, brown soup is the common breakfast of the Bavarian peasants, to which they occasionally add bread. This he avers is infinitely preferable in all respects to that pernicious wash, tea, with which the lower classes of the inhabitants of this island drench their stomachs, and ruin their constitutions. He adds, that a simple infusion of this drug, drank boiling hot, as the poor generally drink it, is certainly a poison, which, though it be sometimes slow in its operation, never fails to produce fatal effects even in the strongest constitution, where the free use of it is continued for a considerable length of time.

The German on his *polenta*, the American on his *mush*, and the North Briton on his *hasty-pudding*, can make a hearty breakfast for a tenth part of what a tea-breakfast would cost, while it is infinitely more wholesome. It has likewise the advantage that no bread is necessary.

The celebrated Dr. Hufeland, in his *Art of prolonging Life*, says, the moderate use of soups is certainly not hurtful; and it is singular that people should imagine it tends too much to relax the stomach. Does not all our drink, even though cold, become in a few minutes a kind of warm soup in the stomach: and does not the stomach retain the same temperature during the whole day? Be careful only not to use it hot, in too great quantity at one time, or too watery. It is attended even with great advantages. It supplies the place of drink, particularly to men of letters, women, and all those who do not drink, or drink very little except at table, and who, when they give over soup, receive into their blood too little moisture. And it is here to be remarked, that fluids used in the form of soups unite much better and sooner with our juices than when drank cold and raw. On this account soup is a great preventative of dryness and rigidity in the body, and, therefore, the best nourishment for old people, and those who are of an arid temperament. It even supplies the place of medicine. After catching cold, in nervous head-aches, colics, and different kinds of cramp in the stomach, warm soup is of excellent service. It may serve as a proof of the utility, or at least harmlessness, of soup, when I remark that our forefathers, who certainly had more strength than we have, used soup; and that it is used by rustics, who are still stronger than

those in refined life; and that all the old people with whom I ever was acquainted were great friends to it.

Remarks.—Although the place of bread may be occasionally supplied by farinacious roots and other vegetables, yet we would by no means wish to discourage the culture of grain. The culture of grain is the culture of men. While the husbandman is raising food for his fellow-creatures, he is laying the foundation of health and longevity to himself and his offspring. Innumerable benefits are connected with the culture of grain. While the artificer is sitting in some awkward posture, breathing confined, and, perhaps, contaminated air, the cultivator of the soil rises with the sun, eats his wholesome meal of milk and farinaceous food, hies him to the field, where he spends the day in useful labor, inhales the fresh breezes, and at eve returns home with a keen appetite, to enjoy his simple repast and sound repose.

It has been said, as artificers can earn more money than those who cultivate the ground, that arts ought to be encouraged, and grain, if necessary, imported. No manufacture is equal to the manufacture of grain. It supplies food for man and beast, while the surplus, by being exported, enriches the nation. Nor is it subject to the uncertainty of other manufactures. They often depend on fashion or caprice, but the necessities of life will always find their value somewhere.

Food considered in a medical point of view.—Under this point of consideration, the most remarkable distinction of foods is into those which are already assimilated with the animal nature, and into those that are not. Animal substances generally are of the first kind, which, although not entirely similar, are nearly so to our nature. Of the second kind are vegetables, which, with much more difficulty are assimilated. But as the nourishment of all animals can be originally traced to the vegetable kingdom, it becomes evident that the principle of all nutrition exists in vegetables.

In the first edition of his *Materia Medica*, Dr. Cullen observes, that though there is, perhaps, no vegetable which does not afford nourishment to some species of animals or other, yet, with regard to mankind, a very considerable distinction is to be made. Those vegetables that are of a mild, bland, agreeable taste, are proper nourishment, while those of an acrid, bitter, and nauseous nature, are improper. We use, indeed, several acrid substances as food, but as spices or condiments, which answer the purpose of medicines,

rather than any thing else, although, not unfrequently, acrid and bitter acrid vegetables are admitted as food. For instance, celery and endive are used in common food, though both are substances of considerable acrimony; but it must be observed, that when we use them, they are previously blanched, which almost totally destroys their acrimony. Or, if we employ other acrid substances, we generally, in a great measure, deprive them of their acrimony by boiling. In different countries the same plants grow with different degrees of acrimony. Garlic, for example, seldom, in this country, enters our food; but in southern countries, where this plant grows more mild, it is frequently used. The plant which furnishes casada, which, in its recent state, is of a very poisonous and acrimonious nature, affords an instance of the necessity of preparing acrid substances, even in hot countries; and there are other plants, such as the wake-robin, which, in their natural state, are so acrimonious that they cannot be swallowed with safety; yet, when deprived of that acrimony by boiling, afford good nourishment.

[The kind of food most suitable for man, has afforded physiologists a fertile theme for discussion. By far the greatest number recommend a mixed diet; yet many names of respectability in science contend, from reason and observation, that it was originally intended that man should subsist on a purely vegetable regimen. A satisfactory solution of this question, however, may be drawn from various sources—as the structure and character of his teeth, and the motion of his jaws; being constructed for both tearing and grinding—the size and organization of his stomach and intestines; being intermediate between those of carnivorous and herbivorous animals—his appetite; which leads him to appropriate both kinds of food to his use—and by the effects produced on him by the different species of aliment; it being a well-known fact, that every nation that has attained a high degree of mental and physical excellence, subsists on a mixed diet; while those nations, which, from climate or other causes, are compelled to live on animal or vegetable food alone, are inferior in stature, strength, and intellectual power to those who use both of them.

Some physiologists who contend for a mixed diet, are inclined to think that man is more herbivorous than carnivorous in his nature, and have gone so far as to conclude that his food should consist of animal and vegetable matter in the proportion of twenty of the latter to twelve of the former. No rule, however, of this kind, can possibly be established—the circumstances of climate, season, exercise, habit, age, and individual peculiarity, must op-

pose any such attempt at generalization. In cold climates, he must ever consume a greater proportion of animal food, if he does not live almost exclusively on it; while in tropical regions, from the very nature of things, a vegetable diet must predominate; even if his appetite did not instinctively point to it as the most suitable for him under such circumstances.

It may be inferred, says Dr. Paris, that the ultimate effects of all aliments must be virtually the same, since every description of food, whether derived from the animal or vegetable kingdom, is converted into blood. The several species can only differ from each other in the quantity of nutriment they afford, in the degree of stimulus they impart to the organs through which they pass, and in the proportion of vital energy they require for their assimilation. A knowledge of these differences, however, is often of great practical utility in the selection of diet, especially in cases of invalids and convalescents.]

Differences between vegetable and animal Food.—Vegetable differs from animal food in many respects. 1st, It has a greater tendency to acidity; whilst animal food of all kinds inclines more to alkalescency and putrefaction. 2d, With regard to their difference of solution in the stomach, heaviness, as it is called, is seldom felt from vegetables, except from tough farinaceous paste, or the most viscid substances; while heaviness from animal food is more frequently noticed, especially when taken in any great quantity. 3d, With regard to mixture, there is no instance of difficult mixture in vegetables, except in vegetable oils; while animal food, especially the fatter meats, both from viscosity and oiliness, are in this respect refractory. 4th, When the putrescency of animal food has proceeded so far, it produces an active stimulus, causing diarrhœa, and dysentery. These effects are, however, but of rare occurrence; whereas from vegetable food and its acid, which, united with bile, proves a strong stimulus, they more frequently occur; fortunately, however, they are of less consequence, if the degree of refrigeration be not very great. 5th, Wherever neither putrefaction nor acidity has gone to any great length, animal food keeps the belly more regular, &c. 6th, Vegetable food gives a greater proportion of succulent matter, and, when exsiccated by the stomach and intestines, is more apt to stagnate and produce costiveness, than stimulating animal food, which, before it reaches the large intestines, where stoppage is made, it has obtained a putrefactive tendency, and gives a proper stimulus; thus, those who are costive

from the use of vegetables, when they return to animal food, are considerably ameliorated in their natural bodily health. See "NATURAL AND MEDICAL DIETETICON, or *Practical Rules for eating and drinking, &c.*" By J. S. Forsyth, &c. p. 63—67.

REMARKS ON SEDENTARY, STUDIOUS, AND LABORIOUS OCCUPATIONS.

THAT men are exposed to particular diseases from the occupations which they follow, is a fact well known; but to remedy this evil is a matter of some difficulty. Most people are under the necessity of following those employments to which they have been bred, whether they be favorable to health or not.

Chemists, founders, forgers, glass-blowers, and several other artists, are hurt by the deleterious air they are obliged to breathe; which is not only loaded with the noxious exhalations arising from metals and minerals, but is so charged with phlogiston* as to be rendered unfit for answering the important purposes of respiration. Hence proceed asthmas, coughs, and pulmonary complaints, so incident to persons who follow these employments.

To prevent such consequences as far as possible, the places where these occupations are carried on ought to be constructed in such a manner as to discharge the smoke and other exhalations, and admit a free current of fresh air. Such artists ought never to continue long at work; and when they give over, they should suffer themselves to cool gradually, and put on their clothes before they go into the open air. They ought never to drink large quantities of cold, weak, or watery liquors while their bodies are hot, nor to indulge in raw fruits, salads, or any thing that is cold on the stomach.†

Miners, and all who work under-ground, are likewise hurt by unwholesome air. The air, by its stagnation in deep mines, not only loses its proper elasticity, and other qualities necessary for respiration, but is often charged with such noxious exhalations as to become a most deadly poison.

* The inflammable principle.—A name given by Stahl to a principle which he imagined was pure fire, or the matter of fire fixed in combustible bodies, in order to distinguish it from fire in action, or in a state of liberty.

† When persons heated with labor, have drank cold liquor, they ought to continue at work for some time after.

The two kinds of air which prove most dangerous to miners, are what they call the *fire-damp* and the *choak-damp*.* In both cases the air becomes a poison by its being loaded with noxious gas.† The danger from the former may be obviated by making it explode before it accumulates in too great quantities; and the latter may be generally carried off by promoting a free circulation of air in the mine.

Miners are not only hurt by unwholesome air, but likewise by the particles of metal which adhere to their skin and clothes. These are taken into the body, and occasion palsies, vertigoes, and other nervous affections, which often prove fatal. Lead, and several other metals, are likewise very pernicious to the health.

Miners ought never to go to work fasting, nor to continue too long at work. Their food ought to be nourishing, and their liquor generous: nothing more certainly hurts them than living too low. They should by all means avoid costiveness. This may either be done by chewing a little rhubarb, or taking a sufficient quantity of salad oil. Oil not only opens the body, but sheathes and defends the intestines from the ill effects of the metals. All who work in mines or metals ought to wash carefully, and to change their clothes as soon as they give over working. Nothing would tend more to preserve the health of such people than a strict, and almost religious, regard to cleanliness.

Plumbers, painters, gilders, smelters, makers of white lead, and many others, who work in metals, are liable to the same diseases as miners; and ought to observe the same directions for avoiding them.

Tallow-chandlers, boilers of oil, and all who work in putrid animal substances, are likewise liable to suffer from the unwholesome smells or effluvia of these substances. They ought to pay the same regard to cleanliness as miners; and when they are affected with nausea, sickness, or indigestion, we would advise them to take an emetic or a gentle purge. Such substances ought always

* These are the names by which miners distinguish damp. The choak-damp extinguishes their candles, hovers about the bottom of the mine, and, for the most part, consists of carbonic acid gas. Fire-damp, or hydrogen gas, occupies the superior spaces of the mine, and does great mischief by exploding whenever it comes in contact with their lights. To subdue this gigantic power, which caused such mutilation and destruction among the miners, by the tremendous explosions that so frequently occurred, was the task which Sir Humphrey Davy assigned to himself, and which, had his genius been baffled, the kingdom could scarcely have hoped to have seen achieved by another. This, however, he was enabled to overcome; and the Safety Lamp, which goes by his name, will remain to after-ages a testimony of his enlightened genius, to which mankind are so infinitely indebted.

† See *Aerial Poison*, under **POISONS**.

to be manufactured as soon as possible. When long kept, they not only become unwholesome to those who manufacture them, but likewise to people who live in the neighborhood.

It would greatly exceed the limits of this part of our subject to specify the diseases peculiar to persons of every occupation; we shall, therefore, consider mankind under the general classes of *Laborious*, *Sedentary*, and *Studious*.

On Various Employments.—Though the working classes are in general the most healthy of all mankind, yet the nature of their occupations, and the places where they are carried on, expose them more particularly to some diseases. Husbandmen, for example, are exposed to all the vicissitudes of the weather, which, in this country, are often very great and sudden, and occasion colds, coughs, quinsies, rheumatisms, fevers, and other acute disorders. They are likewise forced to work hard, and often to carry burdens above their strength, which, by overstraining the vessels, occasion asthmas, ruptures, and pleurisies.

Those who labor without doors are often afflicted with intermitting fevers or agues, occasioned by the frequent vicissitudes of heat and cold, poor living, bad water, sitting or lying on the damp ground, evening dews, or night air, to which they are frequently exposed.

Such as bear heavy burdens, as porters and laborers, are obliged to draw in the air with much greater force, and also to keep their lungs distended, with more violence than is necessary for common respiration: by this means the tender vessels of the lungs are over-stretched, and often burst, insomuch that a spitting of blood or fever ensues.

Carrying heavy burdens is generally the effect of mere laziness, which prompts people to do at once what should be done at twice. Sometimes it proceeds from vanity or emulation. Hence it is, that the strongest men are most commonly hurt by heavy burdens, hard labor, or feats of activity. It is rare to find one who boasts of his strength, without a rupture, spitting of blood, or some other disease, which he reaps as the fruit of his folly.

There are, indeed, some employments which necessarily require a great exertion of strength; as porters, blacksmiths, and carpenters. None ought to follow these but men of strong body; and they should never exert their strength to the utmost, nor work too long. When the muscles are violently strained, frequent rest is necessary, in order that they may recover their tone; without this,

the strength and constitution will soon be worn out, and a premature old age be induced.

St. Anthony's fire (Erysipelas) is a disease very incident to laboring people. It is occasioned by whatever gives a sudden check to the perspiration, as drinking cold water when the body is warm, wet feet, keeping on wet clothes, sitting or lying on the damp ground. It is impossible for those who labor without doors always to guard against these inconveniences; but it is known from experience, that their ill consequences might often be prevented by proper care.

The iliac passion, the colic, and other complaints of the bowels, are often occasioned by the same causes as the erysipelas; but they may likewise proceed from flatulent and indigestible food. Laborers generally eat unfermented bread made of peas, beans, rye, and other windy ingredients. They also devour great quantities of unripe fruits, baked, stewed, or raw, with various kinds of roots and herbs, upon which they drink sour milk, stale small beer, or the like. Such a mixture cannot fail to fill the bowels with wind, and occasion diseases of those parts.

Inflammations, whitloes, and other diseases of the extremities, are likewise common among those who labor without doors. These diseases are often attributed to venom, or some kind of poison; but they generally proceed either from sudden heat after cold, or the contrary. When laborers, milk-maids, &c. come from the field, cold or wet, they run to the fire, and often plunge their hands in warm water; by which means the blood, and other humors in those parts are suddenly expanded, and the vessels not yielding so quickly, strangulation happens, and inflammation or mortification ensues.

When such persons come home cold, they ought to keep at a distance from the fire for some time, to wash their hands in cold water, and to rub them well with a dry cloth. It sometimes happens, that people are so benumbed with cold, as to be quite deprived of the use of their limbs. In this case the only remedy is to rub the parts affected with snow, or, where that cannot be had, with cold water. If they be held near the fire, or plunged into warm water, mortification will generally ensue.

Laborers in the hot season are apt to lie down and sleep in the sun. This practice is so dangerous, that they often awake in a burning fever. These ardent fevers, which prove so fatal about the end of summer and beginning of autumn, are frequently occasioned by this means. When laborers leave off work, which they

ought always to do during the heat of the day, they should go home, or at least get under some cover, where they may repose themselves in safety.

Many people follow their employments in the fields from morning till night, without eating any thing. This cannot fail to hurt their health. However homely their fare may be, they ought to have it at regular times; and the harder they work, the more frequently they should eat.

Soldiers and Sailors, the consequences of their employment.—

The calling of a *soldier*, in time of war, may be ranked among the laborious employments. Soldiers suffer many hardships from the inclemency of seasons, long marches, bad provisions, hunger, watching, unwholesome climates, bad water, &c. These occasion fevers, fluxes, rheumatisms, and other fatal diseases which generally do greater execution than the sword, especially when campaigns are continued too late in the season. A few weeks of cold rainy weather will often prove more fatal than an engagement.

Those who have the command of armies should take care that their soldiers be well clothed and well fed. They ought also to finish their campaigns in due season, and to provide their men with dry and well-aired winter-quarters. These rules, taking care at the same time to keep the sick at a proper distance from those in health, would tend greatly to preserve the lives of the soldiery.

Sailors may also be numbered among the laborious. They undergo great hardships from change of climate, the violence of the weather, hard labor, and bad provisions.

One great source of the diseases of sea-faring people is excess. When they get on shore, after having been long at sea, without regard to the climate, or their own constitutions, they plunge headlong into all manner of riot, and often persist till a fever puts an end to their lives. Thus intemperance, and not the climate, is often the cause why so many of our brave sailors die on foreign coasts. Such people ought not to live too low; but they will find moderation the best defence against fevers and many other maladies.

Sailors, when on duty, cannot avoid sometimes getting wet. When this happens, they should change their clothes as soon as they are relieved, and take every method to restore the perspiration. They should not, in this case, make too free with spirits or other strong liquors, but should rather drink them diluted with warm water, and go immediately to bed, where a sound sleep and a gentle sweat would set all to rights.

But the health of sailors suffers most from unwholesome food. The constant use of salted provisions occasions the scurvy, and other obstinate maladies. It is no easy matter to prevent this disease in long voyages; yet we cannot help thinking that much might be done towards effecting so desirable an end, were due pains bestowed for that purpose. For example, various roots, greens, and fruits, might be kept a long time at sea, as onions, potatoes, cabbages, lemons, oranges, tamarinds, and apples. When fruits cannot be kept, the juices of them, either fresh or fermented, may. With these all the drink, and even the food, of the ship's company ought to be acidulated in long voyages.

We have reason to believe, if due attention were paid to the diet, air, clothing, and, above all things, to the cleanliness of seafaring people, they would be the most healthy set of men in the world; but when these are neglected, the very reverse will happen.

The best medical antidote that we can recommend to sailors or soldiers on foreign coasts, especially where dampness prevails, is the Peruvian bark. This will often prevent fevers, and other fatal diseases. About a drachm of it may be chewed every day; or, if this should prove disagreeable, take

Peruvian bark, 1 ounce.

Orange-peel, 1-2 ounce.

Snake-root, 2 ounces.

To be added, coarsely powdered, to an English quart of brandy, and infused for fourteen days: half a wine-glassful of which is to be taken two or three times a-day, when the stomach is empty.

This has been found to be an excellent antidote against fluxes, putrid, intermitting, and other fevers, in unhealthy climates. It is not material in what form this medicine is taken. It may either be infused in water, wine, or spirits, as recommended above, or made into an electuary with spirit of lemons, oranges, or the like.

The Sedentary.—Though nothing can be more contrary to the nature of man than a sedentary life, yet this class comprehends by far the greater part of the species. Almost the whole female world, and in manufacturing countries the major part of the males, may be reckoned sedentary.*

* The appellation of sedentary has generally been given only to the studious; we can see no reason, however, for restricting it to them alone. Many artificers may, with as much propriety, be denominated sedentary as the studious, with this particular disadvantage, that they are often obliged to sit in very awkward postures, which the studious need not do, unless they please.

Though sedentary employments are necessary, yet there seems to be no reason why any person should be confined for life to these alone. Were such employments intermixed with the more active and laborious, they would never do hurt. It is constant confinement that ruins the health. A man may not be hurt by sitting five or six hours a-day; but if he be obliged to sit ten or twelve, he will soon become diseased.

But it is not want of exercise alone which hurts sedentary people; they likewise suffer from the confined air they breathe. It is very common to see ten or a dozen tailors,* or stay-makers, for example, crowded into one small apartment, where there is hardly room for one person to breathe freely. In this situation they generally continue for many hours at a time, often with the addition of several candles, which tend to waste the air and render it less fit for respiration. Air that is breathed repeatedly, becomes unfit for expanding the lungs. This is one cause of the phthisical coughs, and other complaints of the breast, so frequent among sedentary artificers.

Even the perspiration from a great number of persons pent up together, renders the air unwholesome. The danger from this quarter will be greatly increased, if any of them happen to have bad lungs, or to be otherwise diseased. Those who sit near the person so affected, being forced to breathe the same air, can hardly fail to be infected. It would be a rare thing, however, to find a dozen of sedentary people all in good health. The danger of crowding them together must, therefore, be evident to every one.

Injurious Effects of a Long Inclined Posture.—Many of those who follow sedentary employments are constantly in a bending posture, as shoemakers, tailors, and cutlers. Such a situation is extremely hurtful. A bending posture obstructs all the vital motions, and of course must destroy the health. Accordingly we find such artificers generally complaining of indigestions, flatulences, head-aches, and pains of the breast.

The aliment in sedentary people, instead of being pushed forwards by an erect posture, and the action of the muscles, is in a

* A person of observation, in that line of life, told me, that most tailors die of consumptions; which he attributed chiefly to the unfavorable postures in which they sit, and the unwholesomeness of those places where their business is carried on. If more attention were not paid to profit than to the preservation of human lives, this evil might be easily remedied; but while masters only mind their own interest, nothing will be done for the safety of their servants.

manner confined in the bowels. Hence indigestions, costiveness, wind, and other hypochondriacal affections, are the constant companions of the sedentary. Indeed none of the excretions can be duly performed where exercise is wanting ; and when the matter which ought to be discharged in this way is retained too long in the body, it must have bad effects.

A bending posture is likewise hurtful to the lungs. When these organs are compressed, the air cannot have free access into all parts, so as to expand them properly. Hence tubercles, adhesions, &c. are formed, which often end in consumptions. Being of a soft texture, and in continual action, their functions are easily obstructed by pressure.

The sedentary are not only hurt by pressure on the bowels, but also on their inferior extremities, which obstructs the circulation in these parts, and renders them weak and feeble.

A bad figure of body is a very common consequence of close application to sedentary employments. The spine, for example, by being continually bent, puts on a crooked shape, and generally remains so ever after. But a bad figure of body has already been observed to be hurtful to health, as the vital functions are thereby impeded.

A sedentary life seldom fails to occasion an universal relaxation of the solids. This is the great source whence most of the diseases of sedentary people flow. Scrofula, (king's evil,) consumption, hysterics, and other nervous diseases, now so common, were very little known before sedentary artificers became so numerous ; and they are very little known still among such people as follow active employments without doors.

It is very difficult to remedy those evils, because many who have been accustomed to a sedentary life, like rickety children, lose all inclination for exercise : we shall, however, throw out a few hints with respect to the most likely means for preserving the health of this useful set of people, which some of them, we hope, will be wise enough to take.

It has been already observed, that sedentary artificers are often hurt by their bending posture. They ought, therefore, to stand or sit as erect as the nature of their employments will permit. They should likewise change their posture frequently, and should never sit too long at a time, but leave off work, and walk, ride, run, or do any thing that will promote the vital functions.

Sedentary artificers are generally allowed too little time for exercise ; yet, short as it is, they seldom employ it properly. A jour-

neyman tailor or weaver, for example, instead of walking abroad for exercise and fresh air, at his hours of leisure, chooses often to spend them in a public house, or in playing at some sedentary game, by which he generally loses both his time and his money.

All sedentary artificers ought to pay the most religious regard to cleanliness. Both their situation and occupations render this highly necessary. Nothing would contribute more to preserve their health, than a strict attention to it; and such of them as neglect it, not only run the hazard of losing health, but of becoming a nuisance to their neighbors.

Sedentary people ought to avoid food that is hard of digestion, and should pay the strictest regard to sobriety. A person who works hard without doors will soon throw off a debauch; but one who sits, has by no means an equal chance. Hence it often happens that sedentary people are seized with fevers after hard drinking. When such persons feel their spirits low, instead of running to the tavern for relief, they should ride or walk in the fields. This would remove the complaint more effectually than strong liquor, and would never hurt the constitution.

Advice to the Sedentary.—Instead of multiplying rules for preserving the health of the sedentary, we shall recommend them to the following general plan, viz. That every person who follows a sedentary employment should cultivate a piece of ground with his own hands. This he might dig, plant, sow, and weed at leisure hours, so as to make it both an exercise and amusement, while it produced many of the necessaries of life. After working an hour in a garden, a man will return with more keenness to his employment within doors, than if he had been all the while idle.

Cultivating the ground is every way conducive to health. It not only gives exercise to every part of the body, but the very smell of the earth and fresh herbs revives and cheers the spirits, whilst the perpetual prospect of something coming to maturity delights and entertains the mind. We are so formed as to be always pleased with something in perspective, however distant or however trivial; hence the happiness that most men feel in planting, sowing, and building. These seem to have been the chief employments of the more early ages; and, when kings and conquerors cultivated the ground, there is reason to believe that they knew as well wherein true happiness consisted as we do.

It may seem romantic to recommend gardening to manufacturers in great towns; but observation proves that the plan is very

practicable. This practice has many salutary effects. It not only induces these people to take exercise without doors, but also to eat many greens, roots, &c., of their own growth, which they would never think of purchasing.

Mechanics are too much inclined to crowd into great towns. The situation may have some advantages; but it has likewise many disadvantages. All mechanics who live in the country have it in their power to cultivate a piece of ground; which, indeed, most of them do. This not only gives them exercise, but enables them to live more comfortably. So far at least as my observation extends, mechanics who live in the country are far more happy than those in great towns. They enjoy better health, live in greater affluence, and seldom fail to rear a healthy and numerous offspring.*

In a word, exercise without doors, in one shape or another, is absolutely necessary to health. Those who neglect it, though they may for a while drag out life, can hardly be said to enjoy it. Weak and effeminate, they languish for a few years, and soon drop into an untimely grave.

The Sedentary Studios.—Intense thinking is so destructive to health, that few instances can be produced of studious persons who are strong and healthy. Hard study always implies a sedentary life; and when intense thinking is joined to the want of exercise, the consequences must be bad. We have frequently known even a few months of close application to study, ruin an excellent constitution, by inducing a train of nervous complaints which could never be removed. Man is evidently not formed for continual thought more than for perpetual action, and would be as soon worn out by the one as by the other.

So great is the power of the mind over the body, that, by its influence, the whole vital motions may be accelerated or retarded to almost any degree. Thus, cheerfulness and mirth quicken the circulation, and promote all the secretions; whereas sadness and

* Watchmakers, in consequence of their sedentary habits, are liable to a peculiar species of disease, to which I have witnessed many of them fall victims. Its commencement is indicated by deficient appetite and eructations of wind from the stomach. There is also sallowness of complexion, and a muddy yellow appearance of the eyes. In the progress of the disease great quantities of black coagulated blood is discharged by stool, and occasionally by vomit. On dissection, the whole intestinal canal is found replete with blood either fluid or black and coagulated. The liver and the spleen appear soft, and as it were rotten.

In its more early stages, this disease admits of being checked by active purgatives, exercise, and country air.

profound thought never fail to retard them. Hence it would appear, that even a degree of thoughtlessness is necessary to health. Indeed the perpetual thinker seldom enjoys either health or spirits; while the person who can hardly be said to think at all, generally enjoys both.

Perpetual thinkers, as they are called, seldom think long. In a few years they generally become quite stupid, and exhibit a melancholy proof how readily the greatest blessings may be abused. Thinking, like every thing else, when carried to extreme, becomes a vice; nor can any thing afford a greater proof of wisdom, than for a man frequently and seasonably to unbend his mind. This may generally be done by mixing in cheerful company, active diversions or the like.

Diseases to which Studious People are more peculiarly liable.—Studious persons are very subject to the gout. This painful disease in a great measure proceeds from indigestion, and obstructed perspiration. It is impossible that the man who sits from morning till night should either digest his food, or have any of the secretions in due quantity. But when that matter which should be thrown off by the skin, is retained in the body, and the humors are not duly prepared, diseases must ensue.

Gravel.—The studious are likewise very liable to the stone and gravel. Exercise greatly promotes both the secretion and discharge of urine; consequently a sedentary life must have a contrary effect. Any one may be satisfied of this by observing, that he passes much more urine by day than in the night, and also when he walks or rides, than when he sits. The discharge of urine not only prevents the gravel and stone, but many other diseases.

Hepatic Complaints.—The circulation in the liver being slow, obstructions in that organ can hardly fail to be the consequence of inactivity. Hence sedentary people are frequently afflicted with schirrous livers. But the proper secretion and discharge of the bile is so necessary a part of the animal economy, that where these are not duly performed, the health must soon be impaired. Jaundice, indigestion, loss of appetite, and a wasting of the whole body, seldom fail to be the consequences of a vitiated state of the liver, or obstructions of the bile.

Pulmonary Consumption.—Few diseases prove more fatal to the studious than consumption of the lungs. It has already been observed that this organ cannot be duly expanded in those who do not take proper exercise; and where that is the case, obstructions

and adhesions will ensue. Not only want of exercise, but the posture in which studious persons generally sit, is very hurtful to the lungs. Those who read or write much are ready to contract a habit of bending forwards, and often press with their breast upon a table or bench. This posture cannot fail to hurt the lungs.

Adhesions.—The functions of the heart may likewise by this means be injured. I remember to have seen a man opened, whose pericardium* adhered to the breast-bone in such a manner as to obstruct the motion of the heart, and occasion his death. The only probable cause that could be assigned for this singular symptom was, that the man, whose business was writing, used constantly to sit in a bending posture, with his breast upon the edge of a plain table.

Weakness of the Digestive Organs.—No person can enjoy health who does not properly digest his food. But intense thinking and inactivity never fail to weaken the powers of digestion. Hence the humors become crude and vitiated, the solids weak and relaxed, and the whole constitution goes to ruin.

Head-Ache and Apoplexy.—Long and intense thinking often occasions grievous head-aches, which bring on vertigoes, apoplexies, palsies, and other fatal disorders. The best way to prevent these is, never to study too long at one time, and keep the body regular, either by proper food, or taking frequently a little of some opening medicine.

Inflammation of the Eyes.—Those who read or write much are often afflicted with sore eyes. Studying by candle-light is peculiarly hurtful to the sight. This ought to be practised as seldom as possible. When it is unavoidable, the eyes should be shaded, and the head should not be held too low. When the eyes are weak or painful, they should be bathed every night and morning in cold water, to which a little brandy may be added.

Dropsy.—It has already been observed, that the excretions are very defective in the studious. The dropsy is often occasioned by the retention of those humors which ought to be carried off in this way. Any person may observe that sitting makes his legs swell, and that this goes off by exercise; which clearly points out the method of prevention.

Fever.—Fevers, especially of the nervous kind, are often the effect of intense study; which in a manner unhinges the whole human

* The membranous bag surrounding the heart. Its use is to secrete and contain the vapour of the pericardium, which lubricates the heart and prevents it from concreting or adhering to this membrane.

frame, and not only hurts the vital motion, but disorders the mind itself. Hence delirium, melancholy, and even madness, are not unfrequently the effect of close application to study. In fine, there is no disease which can proceed either from a defect of the usual secretions, or a debility of the nervous system, which may not be induced by intense thinking.

Hypochondriasm.—But the most afflicting of all the diseases which attack the studious is hypochondriasis.* This disease seldom fails to be the companion of deep thought. It may rather be called a complication of maladies than a single one. To what a wretched condition are the best of men often reduced by it! Their strength and appetite fail; a perpetual gloom hangs over their minds; they live in the constant dread of death, and are continually in search of relief from medicine, where, alas! it is not to be found. Those who labor under this disorder, though they are often made the subject of ridicule, justly claim our highest sympathy and compassion.

Hardly any thing can be more preposterous than for a person to make study his sole business. A mere student is seldom a useful member of society. He often neglects the most important duties of life, in order to pursue studies of a very trifling nature.

Advice to Studious and Intense Thinkers.—Studious persons, and those who indulge long and frequently in intense thought, in order to relieve their minds, must not only discontinue to read and write, but engage in some employment or diversion that will so far occupy the thought as to make them forget the business of the closet. A solitary ride or walk are so far from relaxing the mind, that they rather encourage thought. Nothing can divert the mind when it gets into a train of serious thinking, but attention to subjects of a more trivial nature. These prove a kind of play to the mind, and consequently relieve it.

* The state of mind peculiar to hypochondriacs is thus described by Cullen:—"A languor, listlessness, or want of resolution and activity, with respect to all undertakings; a disposition to seriousness, sadness, and timidity, as to all future events, and apprehension of the worst or most unhappy state of them; and, therefore, often upon slight grounds, an apprehension of great evil. Such persons are particularly attentive as to the state of their own health, to every the smallest change of feeling in their bodies; and from any unusual sensation, perhaps of the slightest kind, they apprehend great danger, and even death itself. In respect to these feelings and fears, there is commonly the most obstinate belief and persuasion." And it is only, he adds, when the state of mind just described is joined with indigestion, in either sex, somewhat advanced in years, of a melancholic temperament, and a firm and rigid habit, that the disease takes the name of hypochondriasm.

As studious people are necessarily much within doors, they should make choice of a large and well-aired place for study. This would not only prevent the bad effects which attend confined air, but would cheer the spirits, and have a most happy influence both on the body and mind. It is said of Euripides the tragedian, that he used to retire to a dark cave to compose his tragedies ; and of Demosthenes the Grecian orator, that he chose a place for study where nothing could be either heard or seen. With all deference to such venerable names, we cannot help condemning their taste. A man may surely think to as good purpose in an elegant apartment as in a cave ; and may have as happy conceptions where the cheering rays of the sun render the air wholesome, as in places where they never enter.

Desk Occupations.—Those who read or write much should be very attentive to their posture. They ought to sit and stand by turns, always keeping as nearly in an erect posture as possible. Those who dictate, may do it walking. It has an excellent effect frequently to read or speak aloud. This not only exercises the lungs, but almost the whole body. Hence studious people are greatly benefited by delivering discourses in public. Public speakers, indeed, sometimes hurt themselves, by over-acting their part ; but this is their own fault. The martyr to mere vociferation merits not our sympathy.

Morning best adapted to Study and Exercise.—The morning has, by all medical writers, been reckoned the best time for study. It is so. But it is also the most proper season for exercise, while the stomach is empty, and the spirits refreshed with sleep. Studious people should, therefore, sometimes spend the morning in walking, riding, or some manly diversions without doors. This would make them return to study with greater alacrity, and would be of more service than twice the time after their spirits are worn out with fatigue. It is not sufficient to take diversion only when we can think no longer. Every studious person should make it part of his business, and should let nothing interrupt his hours of recreation more than those of study.

Effects of Music upon the Mind.—Music has a very happy effect in relieving the mind when fatigued with study. It would be well if every studious person were so far acquainted with that science as to amuse himself after severe thought by playing such airs

as have a tendency to raise the spirits, and inspire cheerfulness and good humor.

It is a reproach to learning, that any of her votaries, to relieve the mind after study, should betake themselves to the use of strong liquors. This indeed is a remedy ; but it is a desperate one, and always proves destructive. Would such persons, when their spirits are low, get on horseback, and ride ten or a dozen miles, they would find it a more effectual remedy than any cordial medicine in the apothecary's shop, or all the strong liquors in the world.

Dr. Buchan's Plan.—The following is my plan, and I cannot recommend a better to others. When my mind is fatigued with study or other serious business, I mount my horse, and ride ten or twelve miles into the country, where I spend a day, and sometimes two, with a cheerful friend ; after which I never fail to return to town with new vigor, and to pursue my studies or business with fresh alacrity.

It is much to be regretted, that learned men, while in health, pay so little regard to these things ! There is not any thing more common than to see a miserable object over-run with nervous diseases, bathing, walking, riding, and, in a word, doing every thing for health after it is gone ; yet, if any one had recommended these things to him by way of prevention, the advice would, in all probability, have been treated with contempt, or at least with neglect. Such is the weakness and folly of mankind, and such the want of foresight, even in those who ought to be wiser than others !

Diet of the Studious.—With regard to the diet of the studious, we see no reason why they should abstain from any kind of food that is wholesome, provided they use it in moderation. They ought, however, to be sparing in the use of every thing that is windy, rancid, or hard of digestion. Their suppers should always be light, or taken soon in the evening. Their drink may be water, fine malt liquor, not too strong, good cider, wine and water, or, if troubled with acidities, water mixed with a little brandy, rum, or any other genuine spirit.

The kind of Exercise recommended to people of Studious Habits.—We shall only observe, with regard to those kinds of exercise which are most proper for the studious, that they should not be too violent, nor ever carried to the degree of excessive fatigue. They ought likewise to be frequently varied, so as to give action to all the different parts of the body ; and should, as often as pos-

sible, be taken in the open air. In general, riding on horseback, walking, working in a garden, or playing at some active diversions, are the best.

We would likewise recommend the use of the cold bath to the studious. It will, in some measure, supply the place of exercise, and should not be neglected by persons of a relaxed habit, especially in the warm season.

No person ought either to take violent exercise, or to study immediately after a full meal.

In the above remarks on the usual diseases of the studious, my chief object was to warn them of the evil consequences of *painful* and *intense thinking*. But I should be sorry to damp the ardor of their literary pursuits, which are injurious to health only when continued with incessant toil, at late hours, and without due intervals of rest, refreshment, relaxation, and exercise. It is not thought, says the medical poet, 'tis painful thinking, that corrodes our clay. I deem it necessary to be more explicit on this head, in consequence of having found that my former cautions to men of genius and science had been understood in too rigorous a sense, as discouraging the manly exertion of real talents.

NON-NATURALS.

By the term non-naturals, ancient physicians comprehend *air*, *meat* and *drink*, *sleep* and *watching*, *motion* and *rest*, the *retentions* and *excretions*, and the affections or passions of the mind; or, in other words, those principal matters which do not enter into the composition of the body, but which at the same time are indispensable to its existence.

Observations on Diet.—Unwholesome food, and irregularities of diet, occasion many diseases. There is no doubt but the whole constitution of body may be changed by diet alone. Nor is an attention to diet necessary for the preservation of health only: it is likewise of importance in the cure of diseases. Every intention in the cure of many diseases, may be answered by diet alone. Its effects, indeed, are not always so quick as those of medicine, but they are generally more lasting: besides, it is neither so disagreeable to the patient, nor so dangerous, as medicine, and is always more easily obtained.

Our intention here is not to inquire minutely into the nature and properties of the various kinds of aliment in use among mankind; nor to show their effects upon the different constitutions of the human body; but to mark some of the most pernicious errors which people are apt to fall into, with respect both to the quantity and quality of their food, and to point out their influence upon health.

It is not, indeed, an easy matter to ascertain the exact quantity of food proper for every age, sex, and constitution: but a scrupulous nicety here is by no means necessary. The best rule is to avoid all extremes. Mankind were never intended to weigh and measure their food. Nature teaches every creature when it has enough; and the calls of thirst and hunger are sufficient to inform them when more is necessary.

Though *moderation* is the chief rule with regard to the quantity, yet the quality of food merits a farther consideration. There are many ways by which provisions may be rendered unwholesome. Bad seasons may either prevent the ripening of grain, or damage it afterwards. These, indeed, are the acts of Providence, and we must submit to them; but surely no punishment can be too severe for those who suffer provisions to spoil by hoarding them, on purpose to raise the price, or who promote their own interest by adulterating the necessaries of life.*

Animal as well as vegetable food may be rendered unwholesome by being kept too long. All animal substances have a constant tendency to putrefaction; and when that has proceeded too far, they not only become offensive to the senses, but hurtful to health. Diseased animals, and such as die of themselves, ought never to be eaten.

Animals which feed grossly, as tame ducks, hogs, &c. are neither so easily digested, nor afford such wholesome nourishment as others. No animal can be wholesome which does not take sufficient exercise. Most of our stalled cattle are crammed with gross food, but not allowed exercise nor free air; by which means they indeed grow fat, but their juices, not being properly prepared or assimilated, remain crude, and occasion indigestions, and oppression of the spirits, in those who feed upon them.

Animals are often rendered unwholesome by being over-heated.

* The poor, indeed, are generally the first who suffer by unsound provisions; but the lives of the laboring poor are of great importance to the state: besides, diseases occasioned by unwholesome food often prove infectious, by which means they reach persons in every station. It is, therefore, the interest of all to take care that no spoiled provisions of any kind be exposed to sale.

Excessive heat causes a fever, exalts the animal salts, and mixes the blood so intimately with the flesh, that it cannot be separated. For this reason, butchers should be severely punished who overdrive their cattle. No person would choose to eat the flesh of an animal which had died in a high fever; yet that is the case with all over-drove cattle; and the fever is often raised even to the degree of madness.

But this is not the only way by which butchers render meat unwholesome. The abominable custom of filling the cellular membrane of animals with air, in order to make them appear fat, is every day practised. This not only spoils the meat, and renders it unfit for keeping, but is such a dirty trick, that the very idea of it is sufficient to disgust a person of any delicacy at every thing which comes from the shambles. Who can bear the thought of eating meat which has been blown up with air from the lungs of a fellow, perhaps laboring under the very worst of diseases?

Salted animal food.—Animal food was surely designed for man, and with a proper mixture of vegetables, it will be found the most wholesome; but to eat beef, mutton, pork, fish, and fowl, twice or thrice a-day, is certainly too much. All who value health ought to be contented with making one meal of animal food in twenty four hours, and this ought to consist of one kind only.

Vegetable Diet.—The most obstinate scurvy has often been cured by a vegetable diet; nay, milk alone will frequently do more in that disease than any medicine. Hence it is evident, that if vegetables and milk were more used in diet, we should have less scurvy, and likewise fewer inflammatory fevers. Fresh vegetables, indeed, come to be daily more used in diet; this laudable practice we hope will continue to gain ground.

Aliments.—Our aliment ought neither to be too moist nor too dry. Moist aliment relaxes the solids, and renders the body feeble. Thus we see females, who live much on tea and other watery diet, generally become weak and unable to digest solid food: hence proceed hysterics, and all their dreadful consequences. On the other hand, food that is too dry, disposes the body to inflammatory fevers, scurvies, and the like.

Tea.—Much has been said on the ill-effects of tea in diet. They are, no, doubt, numerous; but they proceed rather from the impru-

dent use of it, than from any bad qualities in the tea itself. Tea is now the universal breakfast in this part of the world; but the morning is surely the most improper time of the day for drinking it. Most delicate persons, who, by-the-bye, are the greatest tea-drinkers, cannot eat any thing in the morning. If such persons, after fasting ten or twelve hours, drink four or five cups of green tea without eating almost any bread, it must hurt them. Good tea, taken in a moderate quantity, not too strong, nor too hot, nor drank upon an empty stomach, will seldom do harm; but if it be bad, which is often the case, or substituted in the room of solid food, it must have many ill effects.

Cookery.—The arts of cookery render many things unwholesome, which are not so in their own nature. By jumbling together a number of different ingredients, in order to make a poignant sauce, or rich soup, the composition proves almost a poison. All high seasoning, pickles, &c. are only incentives to luxury, and never fail to hurt the stomach. It were well for mankind, if cookery, as an art, were entirely prohibited. Plain roasting or boiling is all that the stomach requires. These alone are sufficient for people in health, and the sick have still less need of a cook.

The liquid part of our aliment likewise claims our attention. Water is not only the basis of most liquors, but also composes a great part of our solid food. Good water must, therefore, be of the greatest importance in diet. The best water is that which is most pure, and free from any mixture of foreign bodies. Water takes up parts of most bodies with which it comes into contact; by this means it is often impregnated with metals or minerals of a hurtful or poisonous nature. Hence the inhabitants of some hilly countries have peculiar diseases, which in all probability proceed from the water. Thus the people who live near the Alps in Switzerland, and the inhabitants of the Peak of Derby, in England, have large tumors or wens on their necks (bronchocele.)* This disease is generally imputed to the snow-water; but there is more reason to believe it is owing to the minerals in the mountains through which the waters pass.†

* Bronchocele, or goitre, was very common in Pittsburgh, twenty years since. I have been informed by a medical gentleman, that almost every female in the place was affected with it at that time. It has gradually disappeared of late years, and a case is now rarely met with. He attributes its disappearance to the influence of the smoke of bituminous coal, of which immense quantities are consumed in that city.

† This long controverted opinion, very early broached by Dr. Buchan, relative to the cause of these tumors, (bronchocele, or goitres, &c.) among the inhabitants of certain

Water.—When water is impregnated with foreign bodies, it generally appears by its weight, color, taste, smell, heat or some other sensible quality. Our business, therefore, is to choose such water, for common use, as is lightest, and without any particular color, taste, or smell. In most places the inhabitants have it in their power to make choice of their water, and few things would contribute more to health than a due attention to this article. But mere indolence often induces people to make use of the water that is nearest to them, without considering its qualities.

Before water is brought into great towns, the strictest attention ought to be paid to its qualities, as many diseases may be occasioned or aggravated by bad water; and when once it has been procured at a great expense, people are unwilling to give it up.

The common methods of rendering water clear by filtration; or soft, by exposing it to the sun and air, are so generally known that it is unnecessary to spend time in explaining them. We shall only, in general, advise all to avoid waters which stagnate long in small lakes, ponds, or the like, as such waters often become putrid, by the corruption of animal and vegetable bodies with which they abound. Even cattle frequently suffer by drinking, in dry seasons, water which has stood long in small reservoirs, without being supplied by springs, or freshened with showers. All wells ought to be kept clean, and to have a free communication with the air.

Fermented Liquors.—Notwithstanding fermented liquors have been exclaimed against by many writers, they still continue to be the common drink of almost every person who can afford them; we shall rather endeavor to assist people in the choice of these liquors, than pretend to condemn what custom has so firmly established. It is not the moderate use of sound fermented liquors which hurts mankind: it is excess, and using such as are ill-prepared or vitiated.

Fermented liquors, which are too strong, hurt digestion; and the body is so far from being strengthened by them, that it is weakened and relaxed. Many imagine that hard labor could not be supported without drinking strong liquors; this is a very erroneous notion. Men who never taste strong liquors are not only able to endure more fatigue, but also live much longer, than those who

mountainous districts, is now greatly strengthened, in fact corroborated, by a curious history of the disease, in a letter from Dr. Alexander Coventry, President of the Medical Society of the state of New York, to the editors of the New York Medical and Physical Journal for June, 1824. No. 10. See also "NEW DOMESTIC MEDICAL MANUAL," under BRONCHOCELE.

use them daily. But suppose strong liquors did enable a man to do more work, they must nevertheless waste the powers of life, and occasion premature old age. They keep up a constant fever, which exhausts the spirits, and disposes the body to numberless diseases.

But fermented liquors may be too weak as well as too strong: when that is the case, they must either be drank new, or they become sour and dead: when such liquors are drank new, the fermentation not being over, they generate air in the bowels, and occasion flatulences; and when kept till stale, they turn sour on the stomach, and hurt digestion. For this reason, all malt liquors ought to be of such strength as to keep till they be ripe, and then they should be used. When such liquors are kept too long, though they should not become sour, yet they generally contract a hardness which renders them unwholesome.

All families, who can, ought to prepare their own liquors. Since preparing and vending of liquors became one of the most general branches of business, every method has been tried to adulterate them. The great object both to the makers and venders of liquor is, to render it intoxicating, and give it the appearance of age. But it is well known that this may be done by other ingredients than those which ought to be used for making it strong. It would be imprudent even to name those things which are daily made use of to render liquors heady. Suffice it to say that the practice is very common, and that all ingredients used for this purpose are of a narcotic or stupefactive quality. But as all opiates are poisonous, it is easy to see what must be the consequence of their general use. Though they do not kill suddenly, yet they hurt the nerves, relax and weaken the stomach, and spoil the digestion.

Were fermented liquors faithfully prepared, kept to a proper age, and used in moderation, they would prove real blessings to mankind. But, while they are ill-prepared, various ways adulterated, and taken to excess, they must have many pernicious effects.

Home baked Bread.—We would recommend it to families, not only to prepare their own liquors, but likewise their bread. Bread is so necessary a part of diet, that too much care cannot be bestowed in order to have it sound and wholesome. For this purpose, it is not only necessary that it be made of good grain, but likewise properly prepared, and kept free from all unwholesome ingredients. This, however, we have reason to believe, is not

always the case with bread prepared by those who make a trade of vending it. Their object is rather to please the eye than to consult the health. The best bread is that which is neither too coarse nor too fine; well fermented, and made of Indian corn, or wheat flour, or rather of wheat and rye mixed together.

Plain rules to be observed in the selection of Aliments.—1. Persons whose solids are weak and relaxed ought to avoid all viscid food, or such things as are difficult of digestion. Their diet, however, ought to be nourishing; and they should take sufficient exercise in the open air.

2. Such as abound with blood should be sparing in the use of every thing that is highly nourishing, as fat meat, rich wines, strong ales, and such like. Their food should consist chiefly of bread and other vegetable substances; and their drink ought to be water, whey, or small beer.

3. Fat people should not eat freely of oily nourishing diet. They ought frequently to use radish, garlic, spices, or such things as are heating and promote perspiration and urine. Their drink should be water, coffee, tea, or the like; and they ought to take much exercise and little sleep. Those who are too lean must follow an opposite course.

4. Such as are troubled with acidities, or whose food is apt to sour on the stomach, should live much on animal food; and those who are afflicted with hot alkaline eructations, ought to use a diet consisting chiefly of acid vegetables.

5. People who are affected with the gout, hypochondriac or hysteric disorders, ought to avoid all flatulent food, every thing that is viscid, or hard of digestion, all salted or smoke-dried provisions, and whatever is austere, acid, or apt to turn sour on the stomach. Their food should be light, spare, cool, and of an opening nature.

6. The diet ought not only to be suited to the age and constitution, but also to the manner of life: a sedentary or studious person should live more sparingly than one who labors hard without doors. Many kinds of food will nourish a peasant very well, which would prove almost indigestible to a citizen; and the latter will live upon a diet on which the former would starve.

7. Diet ought not to be too uniform. The constant use of one kind of food might have some bad effects. Nature teaches us this, by the great variety of aliment which she has provided for man, and likewise by giving him an appetite for different kinds of food.

8. Those who labor under any particular disease, ought to avoid such aliments as have a tendency to increase it: for example, a gouty person should not indulge in rich wines, strong soups, or gravies, and should avoid all acids. One who is troubled with the gravel ought to shun all austere and astringent aliments; and those who are scorbutic should be sparing in the use of salted provisions, &c.

General Observations on Diet, Long Fasting, and Regularity.—It has always been an established rule with respect to diet, that the softer and milder kinds of diet are best adapted for children and young subjects generally; that for grown up people the more substantial is necessary; and, with regard to old people, they should gradually, as they advance towards their climax, lessen the quantity of solid food, while they increase that of their drink, both of the diluent and cordial kind; taking care, however, that, in thus accommodating “pliant nature,” that slow must be the change:—

“And stage by stage—
Slow as the stealing progress of the year.”

For nature looks up to custom as a kind of hereditary right to which she is entitled by long possession, and although she may be taught to relinquish her pretensions to it, this must never be attempted by sudden changes, or hasty transitions either of one kind or other.

It is not only necessary for health that our diet be wholesome, but also that it be taken at regular periods. Some imagine long fasting will atone for excess; but this, instead of mending the matter, generally makes it worse. When the stomach and intestines are over distended with food, they lose their proper tone, and by long fasting they become weak, and inflated with wind. Thus either gluttony or fasting destroys the powers of digestion.

Long fasting is extremely hurtful to young people; it not only vitiates their humors, but prevents their growth. Nor is it less injurious to the aged. Most persons in the decline of life, are afflicted with wind: this complaint is not only increased, but even rendered dangerous, and often fatal, by long fasting. Old people, when their stomachs are empty, are frequently seized with giddiness, head-aches, and faintness. These complaints may generally be removed by a piece of bread and a glass of wine, or taking any other solid food; which plainly points out the method of preventing them.

It is more than probable, that many of the sudden deaths, which happen in the advanced periods of life, are occasioned by fasting too long, as it exhausts the spirits, and fills the bowels with wind: we would, therefore, advise people, in the decline of life, never to allow their stomachs to be too long empty. Many people take nothing but a few cups of tea and a little bread, from nine o'clock at night till two or three the next afternoon. Such may be said to fast almost three-fourths of their time. This can hardly fail to ruin the appetite, and fill the bowels with wind; all which might be prevented by a solid breakfast.

Suppers and Breakfasts contrasted.—It is a very common practice to eat a light breakfast and a heavy supper. This custom ought to be reversed. When people sup late, their supper should be very light; but the breakfast ought always to be solid. If any one eats a light supper, goes soon to bed, and rises betimes in the morning, he will be sure to find an appetite for his breakfast, and he may freely indulge it.

The strong and healthy do not indeed suffer so much from fasting as the weak and delicate; but they run great hazard from its opposite, viz. repletion. Many diseases, especially fevers, are the effect of plethora, or too great fulness of the vessels. Strong people, in high health, have generally a great quantity of blood and other humors. When these are suddenly increased by an overcharge of rich and nourishing diet, the vessels become too much distended, and obstructions and inflammations ensue. Hence so many people are seized with inflammatory and eruptive fevers, apoplexies, &c. after a feast or debauch.

All great and sudden changes in diet are dangerous. What the stomach has been long accustomed to digest, though less wholesome, will better agree with it than food of a more salutary nature to which it has not been used. When, therefore, a change becomes necessary, it ought always to be made gradually; a sudden transition from a poor and low to a rich and luxurious diet, or the contrary, might so disturb the functions of the body as to endanger health, or even to occasion death itself.

When we recommend regularity in diet, we would not be understood as condemning every small deviation from it. It is next to impossible for people at all times to avoid some degree of excess, and living too much by rule might make even the smallest deviation dangerous. It may, therefore, be prudent to vary a little, sometimes taking more, sometimes less, than the usual

quantity of meat and drink, provided always that a due regard be had to moderation.

The details which some writers have entered into respecting the supposed qualities of every article of food and drink, as well as the proper quantities of each, appear to me just as trifling as the minuteness of the physician who inserted in his prescription how many grains of salt should be eaten with an egg. Every man's experience of what he has found to agree or disagree with him, is a much more unerring guide than whimsical calculations of the difference between the mucilage of a carrot and a parsnip, or between the jelly contained in a leg and shoulder of mutton. But while I point out the folly of extreme solicitude in such matters, I am far from advising people to eat and drink, without any choice or restraint, whatever falls in their way. This would be inconsistent with the rules I have already laid down. Rational enjoyment of the gifts of nature, is the happy medium between boundless indulgence and frivolous or unnecessary self-denial.

Such as have a faulty circulation through the lungs, the consequence of pulmonary or other complaints, ought to eat very little at a time, because the quantity of chyle being increased must obviously render that circulation more uneasy. The great secret then for consumptive and asthmatic patients in particular, and upon which their cure principally depends, is to take their food in small quantities at a time. It happens, however, rather unfortunately for asthmatic patients, that their desire for food is considerably increased; in consequence of which, sanguification is but imperfectly performed, they become what is termed leucophlegmatic, that is, they acquire a dropsical tendency. The choice, therefore, as well as the quantity, of diet, is of great importance to those who have weak lungs, as well as to persons generally who are of delicate constitutions.

AIR.

UNWHOLESOME AIR is a very common cause of diseases. Few are aware of the danger arising from it. People generally pay some attention to what they eat or drink, but seldom regard what goes into the lungs, though the latter proves often more suddenly fatal than the former.

Air, as well as water, takes up parts of most bodies with which it comes in contact, and is often so replenished with those of a

noxious quality, as to occasion immediate death. But such violent effects seldom happen, as people are generally on their guard against them. The less perceptible influences of bad air prove more generally hurtful to mankind ; we shall, therefore, endeavor to point out some of these, and to show whence the danger chiefly arises.

Air may become noxious many ways. Whatever greatly alters its degrees of heat, cold, moisture, &c. renders it unwholesome. Very cold air obstructs the perspiration, occasions rheumatisms, coughs, and catarrhs, with other diseases of the throat and breast. Air that is too moist destroys the elasticity or spring of the solids, induces phlegmatic or lax constitutions, and disposes the body to intermitting fevers, dropsies, &c.

Wherever great numbers of people are crowded into one place, if the air has not a free circulation it soon becomes unwholesome. Hence it is that delicate persons are so apt to turn sick or faint in crowded churches, assemblies, or any place where the air is injured by breathing, fires, candles, or the like.

In great cities, so many things tend to contaminate the air that it is no wonder it proves so fatal to the inhabitants. The air in cities is not only breathed repeatedly over, but is likewise loaded with sulphur, smoke, and other exhalations, besides the vapors continually arising from innumerable putrid substances, as dung-hills and slaughter-houses. All possible care should be taken to keep the streets of large towns open and wide, that the air may have a free current through them. They ought likewise to be kept very clean. Nothing tends more to pollute and contaminate the air of a city than dirty streets.

It is very common to have church-yards in the middle of populous cities. Whether this be the effect of ancient superstition, or owing to the increase of such towns, is a matter of no consequence. Whatever gave rise to the custom, it is a bad one. It is habit alone which reconciles us to these things ; by means of which the most ridiculous, nay pernicious customs, often become sacred. Certain it is, that thousands of putrid bodies, so near the surface of the earth, in a place where the air is confined, cannot fail to taint it; and that such air, when breathed into the lungs, must occasion disease.*

* In most eastern countries it was customary to bury the dead at some distance from any town. As this practice obtained among the Jews, the Greeks, and also the Romans, it is strange that the western parts of Europe should not have followed their example in a custom so truly laudable.

Burying within churches is a practice still more detestable. The air in churches is seldom good, and the effluvia from decaying bodies must render it still worse. They are seldom open above once a week, are never ventilated by fires nor open windows, and rarely kept clean. This occasions that damp, musty, unwholesome smell which one feels upon entering a church, and renders it a very unsafe place for the weak and valetudinary. These inconveniences might, in a great measure, be obviated by prohibiting all persons from burying within churches, by keeping them clean, and permitting a stream of fresh air to pass frequently through them, by opening opposite doors and windows.*

Wherever air stagnates long, it becomes unwholesome. Hence the unhappy persons confined in jails not only contract malignant fevers themselves, but often communicate them to others. Nor are many of the holes, for we cannot call them houses, possessed by the poor in great towns, much better than jails. These low dirty habitations are the very lurking places of bad air and contagious diseases. Such as live in them seldom enjoy good health; and their children commonly die young. In the choice of a house, those who have it in their power ought always to pay the greatest attention to open free air.

The various methods which luxury has invented to make houses close and warm, contribute not a little to render them unwholesome. No house can be wholesome, unless the air has a free passage through it. For which reason, houses ought daily to be ventilated by opening opposite windows, and admitting a current of fresh air into every room. Beds, instead of being made up as soon as people rise out of them, ought to be turned down, and exposed to the fresh air from the open windows through the day. This would expel any noxious vapour, and could not fail to promote the health of the inhabitants.

In hospitals, jails, and ships, where that cannot be conveniently done, ventilators should be used. The method of expelling foul, and introducing fresh air, by means of ventilators, is a most salutary invention, and is, indeed, the most useful of all our modern medical improvements. It is capable of universal application, and is fraught with numerous advantages, both to those in health and sickness. In all places, where numbers of people are crowded together, ventilation becomes absolutely necessary.

Air which stagnates in mines, wells, and cellars, is extremely

* One cannot pass through a large church or cathedral, even in summer, without feeling quite chilly.

deleterious and fatal to life; and ought to be avoided as the most deadly poison. It often kills almost as quickly as lightning. For this reason people should be very cautious in opening cellars that have been long shut, or going down into deep wells or pits, especially if they have been kept closely covered.*

Many people who have splendid houses, choose to sleep in small apartments. This conduct is very imprudent. A bedchamber ought always to be well aired; as it is generally occupied in the night only, when all doors and windows are shut. If a fire be kept in it, the danger from a small room becomes still greater. Numbers have been stifled when asleep by a fire in a small apartment, which is always hurtful.

Those who are obliged, on account of business, to spend the day in close towns, ought, if possible, to sleep in the country. Breathing free air in the night will, in some measure, make up for the want of it through the day. This practice would have a greater effect in preserving the health of citizens than is commonly imagined.

Delicate persons ought, as much as possible, to avoid the air of great towns. It is peculiarly hurtful to the asthmatic and consumptive. Such persons should avoid cities as they would the plague. The hypochondriac are likewise much hurt by it. I have often seen persons so much afflicted with this malady while in town, that it seemed impossible for them to live, who, upon being removed to the country, were immediately relieved. The same observation holds with regard to nervous and hysteric women. Many people, indeed, have it not in their power to change their situation in quest of better air. All we can say to such persons is, that they should go as often abroad into the open air as they can, that they should admit fresh air frequently into their houses, and take care to keep them very clean.

Surrounding houses too closely with plantations or thick woods, likewise tends to render the air unwholesome. Wood not only obstructs the free current of the air, but sends forth great quantities of moist exhalations, which render it constantly damp. Wood is very agreeable at a proper distance from a house, but should never be planted too near it, especially in a flat country.

Houses situated in low marshy countries, or near large lakes of

* We have daily accounts of persons who lose their lives by going down into deep wells and other places where the air stagnates: all these accidents might be prevented by only letting down a lighted candle before them, and stopping when they perceive it go out; yet this precaution, simple as it is, is seldom used.

stagnating water, are likewise unwholesome. Waters which stagnate not only render the air damp, but load it with exhalations, which produce the most dangerous and fatal diseases. Those who are obliged to inhabit marshy countries, ought to make choice of the driest situations they can find, to live generously, and to pay the strictest regard to cleanliness.

If fresh air be necessary for those in health, it is still more so for the sick, who often lose their lives for want of it. The notion that sick people must be kept very hot, is so common, that one can hardly enter the chamber where a patient lies, without being ready to faint, by reason of the hot suffocating smell. How this must affect the sick any one may judge. No medicine is so beneficial to the sick as fresh air. It is the most reviving of all cordials, if it be administered with prudence. We are not, however, to throw open doors and windows at random upon the sick. Fresh air is to be let into the chamber gradually, and, if possible, by opening the windows of some other apartment.

The air of a sick person's chamber may be greatly freshened, and the patient much revived, by sprinkling the floor frequently with vinegar, juice of lemon, or any other strong vegetable acid.

In places where numbers of sick are crowded into the same house, or, which is often the case, into the same apartment, the frequent admission of fresh air becomes absolutely necessary. Infirmarys, and hospitals, are often rendered so noxious, for want of proper ventilation, that the sick run more hazard from them than from the disease. This is particularly the case when infectious diseases prevail.

EXERCISE.

MANY people look upon the necessity man is under, of earning his bread by labour, as a curse. Be this as it may, it is evident from the structure of the body, that exercise is not less necessary than food for the preservation of health : those who labor for daily bread, are not only the most healthy, but generally the most happy part of mankind. Industry seldom fails to place them above want, and activity serves them instead of physic. This is peculiarly the case with those who live by the culture of the ground. The great increase of inhabitants in infant colonies, and the longevity of such as follow agriculture every where, evidently

prove it to be the most healthful as well as the most useful employment.

The love of activity shows itself very early in man. So strong is this principle, that a healthy youth cannot be restrained from exercise, even by the fear of punishment. Our love of motion is surely a strong proof of its utility. Nature implants no disposition in vain. It seems to be a catholic law through the whole animal creation, that no creature without exercise, should enjoy health, or be able to find subsistence. Every creature, except man, takes as much of it as is necessary. He alone, and such animals as are under his direction, deviate from this original law, and they suffer accordingly.

Inactivity never fails to dispose the body to innumerable diseases. When the solids are relaxed, neither the digestion nor any of the secretions can be duly performed.

Glandular obstructions, now so common, generally proceed from inactivity. These are the most obstinate of maladies. So long as the liver, kidneys, and other glands, duly perform their functions, health is seldom impaired : but when they fail, nothing can restore it. Exercise is almost the only cure we know for glandular obstructions : indeed, it does not always succeed as a remedy ; but there is reason to believe that it would seldom fail to prevent these complaints, were it used in due time. One thing is certain, that amongst those who take sufficient exercise, glandular diseases are very little known ; whereas the indolent and inactive are very seldom free from them.

Weak nerves are the constant companions of inactivity. Nothing but exercise and open air can brace and strengthen the nerves, or prevent the endless train of diseases which proceed from a relaxed state of these organs. We seldom hear the active or laborious complain of nervous diseases ; these are reserved for the sons of ease and affluence. Many have been completely cured of these disorders by being reduced, from a state of opulence, to labor for their daily bread. This plainly points out the sources from whence nervous diseases flow, and the means by which they may be prevented.

It is absolutely impossible to enjoy health where the perspiration is not duly carried on ; but that can never be the case where exercise is neglected. Exercise alone would prevent many of those diseases which cannot be cured, and would remove others where medicine proves ineffectual.

A late author,* in his excellent treatise on health, says, that the weak and valetudinary ought to make exercise a part of their religion. We would recommend this, not only to the weak and valetudinary, but to all whose business does not oblige them to take sufficient exercise, as sedentary artificers,† shopkeepers, and studious persons. Such ought to use exercise as regularly as they take food. This might generally be done without any interruption to business or real loss of time.

No piece of indolence hurts the health more than the modern custom of lying a-bed too long in the morning. This is the general practice in great towns. The inhabitants of cities seldom rise before eight or nine o'clock; but the morning is undoubtedly the best time for exercise, while the stomach is empty, and the body refreshed with sleep. Besides, the morning-air braces and strengthens the nerves, and, in some measure, answers the purpose of a cold bath. Let any one who has been accustomed to lie a-bed till eight or nine o'clock, rise by six or seven, spend a couple of hours in walking, riding, or any active diversion without doors, and he will find his spirits cheerful and serene through the day, his appetite keen, and his body braced and strengthened. Custom soon renders early rising agreeable, and nothing contributes more to the preservation of health.

The inactive are continually complaining of pains of the stomach, flatulencies, and indigestion. These complaints, which pave the way to many others, are not to be removed by medicines. They can only be cured by a vigorous course of exercise, to which indeed they seldom fail to yield.

Exercise, if possible, ought always to be taken in the open air. When that cannot be done, various methods may be contrived for exercising the body within doors, as the dumb bell, dancing, fencing, &c. It is not necessary to adhere strictly to any particular kind of exercise. The best way is to take them by turns, and to

* Cheyne.

† Sedentary occupations ought chiefly to be followed by women. They bear confinement much better than men, and are fitter for every kind of business which does not require much strength. It is ridiculous enough to see a lusty fellow making pins, needles, or watch-wheels, while many of the laborious parts of husbandry are carried on by the other sex. The fact is, we want men for laborious employments, while one half of the other sex are rendered useless for want of occupations suited to their strength. Were girls bred to mechanical employments, we should not see such numbers of them prostitute themselves for bread, nor find such a want of men for the important purposes of navigation, agriculture, &c. An eminent silk manufacturer told me, that he found women answer better for that business than men; and that he had lately taken a great many girls apprentices as silk-weavers. I hope his example will be followed by many others.

use that longest which is most suitable to the strength and constitution. Those kinds of exercise which give action to most of the bodily organs, are always to be preferred, as walking, running, riding, digging, rubbing furniture, and such like.

It is much to be regretted, that active and manly diversions are now so little practised. Diversions make people take more exercise than they otherwise would do, and are of the greatest service to such as are not under the necessity of laboring for their bread. As active diversions lose ground, those of a sedentary kind seem to prevail. Sedentary diversions are of no other use but to consume time. Instead of relieving the mind, they often require more thought, than either study or business. Every thing that induces people to sit still, unless it be some necessary employment, ought to be avoided.

The diversions which afford the best exercise are hunting, shooting, playing at cricket, hand-ball, &c. These exercise the limbs, promote perspiration, and the other secretions. They likewise strengthen the lungs, and give firmness and agility to the whole body.

Such as can, ought to spend two or three hours a day on horse-back; those who cannot ride, should employ the same time in walking. Exercise should never be continued too long. Over-fatigue prevents the benefit of exercise, and instead of strengthening the body tends to weaken it.

Every man should lay himself under some sort of necessity to take exercise. Indolence, like other vices, when indulged, gains ground, and at length becomes agreeable. Hence many who were fond of exercise in the early part of life, become quite averse from it afterwards. This is the case of most hypochondriac and gouty people, which renders their diseases in a great measure incurable.

In some countries laws have been made, obliging every man, of whatever rank, to learn some mechanical employment. Whether such laws were designed for the preservation of health, or the encouragement of manufacture, is a question of no importance. Certain it is, that if gentlemen were frequently to amuse and exercise themselves in this way, it might have many good effects. They would at least derive as much honor from a few masterly specimens of their own workmanship, as from the character of having ruined most of their companions by gaming or drinking. Besides, men of leisure, by applying themselves to the mechanical arts, might improve them, to the great benefit of society.

Indolence not only occasions diseases, and renders men useless to society, but promotes all manner of vice. To say a man is idle, is little better than to call him vicious. The mind, if not engaged in some useful pursuit, is constantly in quest of ideal pleasures, or impressed with the apprehension of some imaginary evil. From these sources proceed most of the miseries of mankind. Certainly man was never intended to be idle. Inactivity frustrates the very design of his creation; whereas an active life is the best guardian of virtue, and the greatest preservative of health.

It is indeed evident, that the love of motion, as well as the love of food, so observable in every living creature from the moment of its birth, are wisely designed by nature as the means of its preservation. The indolent man is therefore a rebel to her laws, and will certainly provoke her severest punishment. In vain does he hope for enjoyment in the lap of sloth; its chilling influence poisons the source of every pleasure, and not only invites disease, but renders it almost incurable.

SLEEP.

THE benefits resulting from sleep are sufficiently obvious, from the effects it produces. It restores both the powers of the mind and body, when exhausted by exercise, giving vigor to the one, and restoring the other to its accustomed alacrity. By means of sleep, the muscles are again rendered active and moveable, after they have become wearied, rigid, painful, and trembling, from hard labor and severe exercise. It moderates the quickness of the pulse, which usually increases at night, and brings it back to its morning standard. It seems also to assist digestion of aliment—it diminishes both excretions and secretions; and renders the fluids thicker than otherwise they would be, particularly in a body endowed with much sensibility or mobility. Sleep, therefore, is not only useful, but absolutely indispensable, for the preservation of life and health; and it contributes most essentially to the alleviation, as well as to the total removal of disease. The want of it is equally hurtful, and in many different ways, to the nervous system. Its absence renders the external as well as internal organs of sense, and those of every kind of motion, unfit for the performance of their offices.

Sleep, therefore, like diet, ought to be duly regulated. Too lit-

the sleep weakens the nerves, exhausts the spirits, and occasions diseases; and too much renders the mind dull, the body gross, and disposes to apoplexies, lethargies, and other complaints of a similar nature. A medium ought therefore to be observed; but this is not easy to fix. Children require more sleep than grown persons, the laborious than the idle, and such as eat and drink freely, than those who live abstemiously. Besides, the real quantity of sleep cannot be measured by time; as one person will be more refreshed by five or six hours sleep than another by eight or ten.

Children may always be allowed to take as much sleep as they please; but for adults, six or seven hours is certainly sufficient, and no one ought to exceed eight. Those who lie in bed more than eight hours may slumber, but they can hardly be said to sleep; such generally toss and dream away the fore part of the night, sink to rest towards morning, and dose till noon. The best way to make sleep sound and refreshing is to rise betimes. The custom of lying in bed for nine or ten hours, not only makes the sleep less refreshing, but relaxes the solids, and greatly weakens the constitution.

Nature points out night as the proper season for sleep. Nothing more certainly destroys the constitution than night-watching. It is a great pity that a practice so destructive to health should be so much in fashion. How quickly the want of rest in due season will blast the most blooming complexion, or ruin the best constitution, is evident from the ghastly countenances of those who, as the phrase is, turn day into night, and night into day.

To procure refreshing Sleep.—To make sleep refreshing, the following things are requisite: First, to take sufficient exercise in the open air; to avoid strong tea or coffee; next, to eat a light supper; and, lastly, to lie down with a mind as cheerful and serene as possible.

It is certain that too much exercise will prevent sleep, as well as too little. We seldom, however, hear the active and laborious complain of restless nights. It is the indolent and slothful who generally have these complaints. Is it any wonder that a bed of down should not be refreshing to a person who sits all day in an easy chair? A great part of the pleasure of life consists in alternate rest and motion; but they who neglect the latter can never relish the former. The laborer enjoys more true luxury in plain food and sound sleep, than is to be found in sumptuous tables and pillows, where exercise is wanting.

That light suppers cause sound sleep, is true even to a proverb. Many persons, if they exceed the least at that meal, are sure to have uneasy nights; and, if they fall asleep, the load and oppression on their stomach and spirits occasion frightful dreams, broken and disturbed repose, or the night-mare. Were the same persons to go to bed with a light supper, or sit up till that meal was pretty well digested, they would enjoy sound sleep, and rise refreshed and cheerful. There are indeed some people who cannot sleep unless they have eat some solid food at night; but this does not imply the necessity of a heavy supper: besides, these are generally persons who have accustomed themselves to this method, and who do not take a sufficient degree of exercise.

Nothing more certainly disturbs our repose than anxiety. When the mind is not at ease, one seldom enjoys sound sleep. This greatest of human blessings flies the wretched and visits the happy, the cheerful, and the gay. This is a sufficient reason why every man should endeavor to be as easy in his mind as possible when he goes to rest. Many by indulging grief and anxious thought, have banished sound sleep so long, that they could never afterwards enjoy it.

Sleep, when taken in the fore part of the night, is generally reckoned most refreshing. Whether this be the effect of habit or not, is hard to say; but as most people are accustomed to go early to bed when young, it may be presumed that sleep, at this season, will prove most refreshing to them ever after. Whether the fore part of the night be best for sleep or not, surely the fore part of the day is fittest both for business and amusement. I hardly ever knew an early riser who did not enjoy a good state of health.*

Early rising is the natural consequence of going to bed early; and this habit implies sobriety, good order, and an exemption from many fashionable follies extremely prejudicial to health. The man, who accustoms himself to go to bed at an early hour, can seldom join the revels of Bacchus, or what are improperly called the amusements of the gay world. His rest is not disturbed by the effects of unseasonable luxury. He knows, that temperance, moderate exercise, composure of mind, and external tranquillity,

* Men of every occupation, and in every situation of life, have lived to a good old age; nay some have enjoyed this blessing whose plan of living was by no means regular: but it consists with observation, that all very old men have been early risers. This is the only circumstance attending longevity to which I never knew an exception.

are the best opiates. His slumbers are sound and refreshing. The waste of spirits on the preceding day is fully repaired. Every muscle, every fibre, every nerve has regained its proper tone. He rises with cheerfulness and vigor to breathe the morning air, and to enter upon the duties of the day. In short, an attention to this single point of going to bed early, and of rising betimes, will be found to supercede a variety of other precepts, and may be justly called the *golden rule* for the attainment of health and long life.

CLOTHING.

THE CLOTHING ought to be suited to the climate. Custom has, no doubt, a very great influence in this article; but no custom can ever change the nature of things so far, as to render the same clothing fit for an inhabitant of Nova Zembla and the island of Jamaica. It is not indeed necessary to observe an exact proportion between the quantity of clothes we wear, and the degree of latitude which we inhabit; but, at the same time, proper attention ought to be paid to it, as well as to the openness of the country, the frequency and violence of storms, &c.

In youth, while the blood is hot and the perspiration free, it is less necessary to cover the body with a great quantity of clothes; but in the decline of life, when the skin becomes rigid and the humors more cool, the clothing should be increased. Many diseases in the latter period of life proceed from a defect of perspiration: these may, in some measure, be prevented by a suitable addition to the clothing, or by wearing such as are better calculated for promoting the discharge from the skin, as clothes made of cotton, flannel, and similar articles.

The clothing ought likewise to be suited to the season of the year. Clothing may be warm enough for summer, which is by no means sufficient for winter. The greatest caution, however, is necessary in making these changes. We ought neither to put off our winter clothes too soon, nor to wear our summer ones too long. In this country, the winter often sets in very early with great rigor, and we have frequently cold weather even after the commencement of the summer months. It would likewise be prudent not to make the change all at once, but to do it gradually; and indeed the changes of apparel in this climate ought to be very



Outline of Venus De Medicis



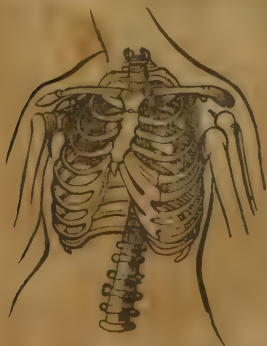
Outline of the form of a modern Belle.



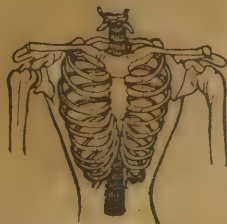
Venus in the loose costume of the ancients



A Belle of the 19th century in a ball dress.



The skeleton as Nature formed it.



The skeleton as Art has deformed it.

inconsiderable, especially among those who have passed the meridian of life.*

Clothes often become hurtful to the wearer by their being made subservient to the purposes of pride or vanity. Mankind in all ages seem to have considered clothes in this view; accordingly their fashion and figure have been continually varying, with very little regard either to health, the climate, or convenience; a farthingale, for example, may be very necessary in hot southern climates, but surely nothing can be more ridiculous in the cold regions of the north.

Even the human shape is often attempted to be mended by dress, and those who know no better believe that mankind would be monsters without its assistance. All attempts of this nature are highly pernicious. The most destructive of them in this country is that of squeezing the stomach and bowels into as narrow a compass as possible, to procure what is falsely called, a fine shape.† By this practice, the action of the stomach and bowels, the motion of the heart and lungs, and almost all the vital functions, are obstructed. Hence proceed indigestions, syncopes or fainting fits, coughs, consumptions of the lungs, and other complaints so common among females.

[The use of *corsets* is the most prolific cause of curved spine, a disease of very common occurrence since the introduction of French fashions into America. Mr. Knox, in an essay written as far back as 1530, in investigating the nature of spinal affections, refers to the indiscretions in dress of females as a cause, and strenuously advises "the discontinuance of corsets, and other bandages calculated to disfigure the human frame." Their operation destroys entirely the natural symmetry and configuration of the female chest, rendering it round or oval, whereas it is properly truncated. Its parietes are pressed inwards on the contained viscera, impeding their functions, and in many instances exciting disorganization or alteration of structure. The lower portion of the sternum is pressed against the viscera, while the upper is rather projecting.

* That colds kill more than plagues, is an old observation; and, with regard to this country, it holds strictly true. Every person of discernment, however, will perceive, that most of the colds which prove so destructive are owing to imprudence in changing clothes. A few warm days in March or April induce us to throw off our winter garments, without considering that our most penetrating colds generally happen in the spring.

† This madness seems to have pervaded the minds of mothers in every age and country. Terence, in his comedy of the *Eunuch*, ridicules the Roman matrons for attempting to mend the shape of their daughters.

In addition to the direct action of the corset in diminishing the capacity of the chest laterally, it also diminishes it vertically, by pushing the superior abdominal viscera upwards against the diaphragm, preventing its descent, and of course impeding respiration. Its effects on the respiration of the female may be noticed by the most superficial observer. She breathes with the diaphragm, receiving no assistance from the intercostal muscles, and consequently the natural movement of the sternum and ribs upwards and outwards is entirely wanting. The abdominal viscera also feel the effects of compression—the liver and stomach, and in a particular manner, the ascending and transverse colon are deranged.

The muscles which sustain the frame in an erect position are also paralyzed. They cannot perform their functions, and accordingly lose in a great degree their health and vigor. The pressure being continued, at last produces such debility that they cease to exercise any power whatever; and if the corset be laid aside, the column bends just as the superincumbent weight may incline it, while, if it be continued, the disease is only aggravated.

But its influence on the muscles is only the commencement of a series of causes and effects, which eventually terminate in confirmed disease of all the vital organs—one organ after another yielding to an affection induced by an evil generally unsuspected as the cause, and left to continue its baleful influence.*]

The feet likewise often suffer by pressure. How a small foot came to be reckoned genteel, I will not pretend to say; but certain it is, that this notion has made many persons lame. Almost nine-tenths of mankind are troubled with corns; a disease that is seldom or never occasioned but by strait shoes. Corns are not only very troublesome, but by rendering people unable to walk, they may likewise be considered as the remote cause of other diseases.†

The size and figure of the shoe ought certainly to be adapted to the foot. In children the feet are as well shaped as the hands, and

* *Norwood on Spinal Diseases*, p. 8.

† We often see persons, who are rendered quite lame by the nails of their toes having grown into the flesh, and frequently hear of mortifications proceeding from this cause. All these, and many other inconveniences attending the feet, must be imputed solely to the use of short and tight shoes.

Though we hear frequently of plasters, salves, and ointments, for eradicating corns, yet they are never known to produce that effect. The only rational mode of proceeding is to soften the corn a little by immersion in warm water, and then to cut it carefully, and to renew this operation every week, till the scarf skin is reduced to its original or natural thinness, after which it must be preserved from the irritating pressure of strait shoes, which had at first occasioned the painful callosity.

the motion of the toes as free and easy as that of the fingers; yet few persons in the advanced period of life are able to make any use of their toes; they are generally, by narrow shoes, squeezed all of a heap, and often laid over one another in such a manner as to be rendered altogether incapable of motion. Nor is the high heel less hurtful than the narrow toe. A lady may seem taller for walking on her tiptoes, but she will never walk well in this manner. It strains her joints, distorts her limbs, makes her stoop, and utterly destroys all her ease and gracefulness of motion.

In fixing on the clothes, due care should be taken to avoid all tight bandages. Garters and buckles, when drawn too tight, not only prevent the free motion and use of the parts about which they are bound, but likewise obstruct the circulation of the blood, which prevents the equal nourishment and growth of these parts, and occasions various diseases. Tight bandages about the neck, as stocks, cravats, and necklaces, are extremely dangerous. They obstruct the blood in its course from the brain, by which means head-aches, vertigoes, apoplexies, and other fatal diseases, are often occasioned.

The perfection of dress is to be easy and clean. Nothing can be more ridiculous, than for any one to make himself a slave to fine clothes. Such a one, and many such there are, would rather remain as fixed as a statue from morning till night, than discompose a single hair, or alter the position of a pin. Were we to recommend any particular pattern for dress, it would be that which is worn by the people called Quakers. They are always neat, clean, and often elegant, without any thing superfluous. What others lay out upon laces, ruffles, and ribands, they bestow upon superior cleanliness.

We shall only add, with regard to clothing, that it ought not only to be suited to the climate, the season of the year, and the period of life, but likewise to the temperature and constitution. Robust persons are able to endure either cold or heat better than the delicate, consequently may be less attentive to their clothing. But the precise quantity of clothes necessary for any person cannot be determined by reasoning. It is entirely a matter of experience, and every man is the best judge for himself what quantity of clothes is necessary to keep him warm.*

* The celebrated Boerhaave used to say, that nobody suffered by cold, save fools and beggars; the latter not being able to procure clothes, and the former not having sense to wear them. Be this as it may, I can with the strictest truth declare, that in many cases, where

Since the first publication of the preceding remarks, very important changes have taken place in the dress of our fair countrywomen, which afford the strongest proofs of their good sense and taste. The shape is no longer distorted, nor is growth checked and the vital functions impeded by a whalebone press. Easy, safe, and graceful motion in a flat-heeled shoe has completely abolished the awkwardness and danger of former attempts to totter about, as it were upon stilts. In a word, a becoming regard to health, simplicity, and elegance, seems now to have more influence over female fashions than absurdity, caprice, or the desire of concealing any personal deformity.

I wish I could pay my own sex the same compliment which the ladies have so well deserved. But an affectation of what is called military smartness seems to have converted their whole apparel into a system of bandages. The hat is as tight as if it was intended for a helmet, and to defy the fury of a hurricane. Its form also being by no means suited to the natural shape of the head, it must be worn for a considerable time with very painful and unequal pressure, before it can be made to fit its new block. The neck is bolstered up and swathed with the most unnatural stiffness. Easy motion without, and free circulation within, are alike obstructed. Blotches and eruptions in the face, head-aches, apoplexies, and sudden deaths, may be often traced to this cause; and if we view its effects in another light, we shall not be surprised at any inconsistency in the language or conduct of persons who take so much pains to suspend all intercourse between the head and the heart.

The close pressure of the other articles of dress is equally reprehensible. Narrow sleeves are a great check upon the muscular exercise of the arms. The waistcoat in its present fashionable form, may be very properly termed a *strait* one; and, no doubt, is in many instances an indication of some mental derangement. The wrists are braced with ligatures, or tight buttoning; and the legs which require the utmost freedom of motion, are screwed into leathern cases, as if to convey an idea that the wearer is sometimes mounted on horseback. To complete the whole, and in order that the feet may be kept in as tight a press as the head, when shoes are to be worn, the shape of the foot, and the easy

the powers of medicine had been tried in vain, I have cured the patient by recommending thick shoes, a flannel waistcoat and drawers, a pair of under-stockings, or a flannel petticoat, to be worn during the cold season at least. Where warmer clothes is wanted, I would recommend the fleecy hosiery to be worn next the skin.

expansion of the toes are never consulted, but fashion regulates the form of the shoe, sometimes square-toed, frequently pointed, and always sure to produce cramps and corns, the keen, the sensible announcers of every change of the weather. I have so long employed serious argument upon these subjects in vain, that I am now accustomed to view them with pleasantry; and when I meet with such figures, disguised, and rendered truly awkward both in their motions and appearance, I cannot help thinking with Shakespeare, "that some of Nature's journeymen had made them and not made them well; they imitate humanity so abominably!"

OF INTEMPERANCE.

A MODERN author* observes, that temperance and exercise are the two best physicians in the world. He might have added, that if these were duly regarded, there would be little occasion for any other. Temperance may justly be called the parent of health; yet numbers of mankind act as if they thought diseases and death too slow in their progress, and, by intemperance and debauch, seem as it were to solicit their approach.

The danger of intemperance appears from the very construction of the human body. Health depends on that state of the solids and fluids which fits them for the due performance of the vital functions; and while these go regularly on, we are sound and well; but whatever disturbs them necessarily impairs health. Intemperance never fails to disorder the whole animal economy; it hurts the digestion, relaxes the nerves, and renders the different secretions irregular, vitiates the humors, and occasions numberless diseases.

The analogy between the nourishment of plants and animals affords a striking proof of the danger of intemperance. Moisture and manure greatly promote vegetation; yet an over-quantity of either will entirely destroy it. The best things become hurtful, nay destructive, when carried to excess. Hence we learn, that the highest degree of human wisdom consists in regulating our appetites and passions so as to avoid all extremes. It is that chiefly which entitles us to the character of rational beings. The slave of appetite will ever be the disgrace of human nature.

* Rousseau.

The author of nature has endued us with various passions, for the propagation of the species, the preservation of the individual, &c. Intemperance is the abuse of these passions; and moderation consists in the proper regulation of them. Men, not contented with satisfying the simple calls of nature, create artificial wants, and are perpetually in search of something that may gratify them; but imaginary wants can never be gratified. Nature is content with little; but luxury knows no bounds. Hence the epicure, the drunkard, and the debauchee, seldom stop in their career till their money or their constitution fails; then indeed they generally see their error when too late.

It is impossible to lay down fixed rules with regard to diet, on account of the different constitutions of mankind. The most ignorant person, however, certainly knows what is meant by excess: and it is in the power of every man, if he chooses, to avoid it.

The great rule of diet is to study simplicity. Nature delights in the most plain and simple food, and every animal, except man, follows her dictates. Man alone riots at large, and ransacks the whole creation in quest of luxuries, to his own destruction. An elegant writer* of the last age speaks thus of intemperance in diet: "For my part, when I behold a fashionable table set out in all its magnificence, I fancy that I see gout and dropsies, fevers and lethargies, with other innumerable distempers, lying in ambuscade among the dishes."

Nor is intemperance in other things less destructive than in diet. How quickly does the immoderate pursuit of carnal pleasures, or the abuse of intoxicating liquors, ruin the best constitution! Indeed these vices generally go hand in hand. Hence it is that we so often behold the votaries of Bacchus and Venus, even before they have arrived at the prime of life, worn out with disease, and hastening with swift pace to an untimely grave. Did men reflect on the painful diseases and premature deaths which are daily occasioned by intemperance, it would be sufficient to make them shrink back with horror from the indulgence even of their darling pleasures.

Intemperance does not hurt its votaries alone; the innocent too often feel the direful effects of it. How many wretched orphans are to be seen whose parents, regardless of the future, spent in riot and debauch what might have served to bring up their offspring in a decent manner! How often do we behold the miserable

* Addison.

mother, with her helpless infants, pining in want, while the cruel father is indulging his insatiate appetites !

Families are not only reduced to misery, but even extirpated, by intemperance. Nothing tends so much to prevent propagation, and to shorten the lives of children, as the intemperance of parents. The poor man who labors all day, and at night lies down contented with his humble fare, can boast a numerous offspring, while his pampered lord, sunk in ease and luxury, often languishes without an heir to his ample fortunes. Even states and empires feel the influence of intemperance, and rise or fall as it prevails.

Instead of mentioning the different kinds of intemperance, and pointing out their influence upon health, we shall only, by way of example, make a few observations on one particular species of that vice, viz. *the abuse of intoxicating liquors*.

Every act of intoxication puts nature to the expense of a fever, in order to discharge the poisonous draught. When this is repeated almost every day, it is easy to foresee the consequences. That constitution must be strong indeed which is able long to hold out under a daily fever; but fevers occasioned by drinking do not always go off in a day; they frequently end in an inflammation of the breast, liver, or brain, and produce fatal effects.

Though the drunkard should not fall by an acute disease, he seldom escapes those of a chronic kind. Intoxicating liquors, when used to excess, weaken the bowels and spoil the digestion; they destroy the power of the nerves, and occasion paralytic and convulsive disorders; they likewise heat and inflame the blood, destroy its balsamic quality, render it unfit for circulation and the nourishment of the body. Hence obstructions, atrophies, dropsies, and diseases of the lungs. These are the common ways in which drunkards make their exit. Disorders of this kind, when brought on by hard drinking, seldom admit of a cure.

Many people injure their health by drinking, who seldom get drunk. The continual habit of "soaking," as it is called, though its effects be not so violent, is not less pernicious. When the vessels are kept constantly full and upon the stretch, the different digestions can neither be duly performed, nor the humors properly prepared. Hence most people of this character are afflicted with the gout, the gravel, ulcerous sores in the legs, &c. If these disorders do not appear, they are seized with low spirits, hypochondriacal affections, and other symptoms of indigestion.

Hard drinking is no doubt one of the causes to which we must impute the increase of consumptions. There are few great ale-

drinkers who are not phthysical: nor is that to be wondered at, considering the glutinous and almost indigestible nature of strong ale.

Those who drink ardent spirits or strong wines run still greater hazard; these liquors heat and inflame the blood, and tear the tender vessels of the lungs to pieces.

The habit of drinking proceeds frequently from misfortunes in life. The miserable fly to it for relief. It affords them, indeed, a temporary ease. But, alas ! this solace is short-lived; and when it is over, the spirits sink as much below their usual tone as they had before been raised above it. Hence a repetition of the dose becomes necessary, and every fresh dose makes way for another, till the unhappy wretch becomes a slave to the bottle, and at length falls a sacrifice to what at first perhaps was taken only as a medicine. No man is so dejected as the drunkard when his debauch is gone off. Hence it is, that those who have the greatest flow of spirits while the glass circulates freely, are of all others the most melancholy when sober, and often put an end to their own miserable existence in a fit of spleen or ill-humor.

Drunkenness not only proves destructive to health, but likewise to the faculties of the mind. It is strange that creatures, who value themselves on account of a superior degree of reason to that of brutes, should take pleasure in sinking so far below them. Were such as voluntarily deprive themselves of the use of reason to continue ever after in that condition, it would seem but a just punishment. Though this be not the consequence of one act of intoxication, it seldom fails to succeed a course of it. By a habit of drinking, the greatest genius is often reduced to a mere idiot.

Intoxication is peculiarly hurtful to young persons. It impairs their strength, and obstructs their growth; besides, the frequent use of strong liquors in the early part of life destroys any benefit that might arise from them afterwards. Those who make a practice of drinking generous liquors when young, cannot expect to reap any benefit from them as a cordial in the decline of life.

Drunkenness is not only in itself a most abominable vice, but it is an inducement to many others. There is hardly any crime so horrid that the drunkard will not perpetrate for the love of liquor. We have known mothers sell their children's clothes, the food that they should have eat, and afterwards even the infants themselves, in order to purchase the accursed draught.

It is of the utmost importance to check the first propensities to gluttony and intoxication; or they soon become uncontrollable.

With respect to eating, the stomach, being often put upon the full stretch, feels uneasiness from the least vacuity, and acquires by degrees a sort of unnatural craving, the gratifications of which are sure to be attended with a stupor, debility, and disease.

The same remark is applicable to drinking. After frequent indulgence in excess, the smallest self-denial causes a faintness and depression of spirits, which nothing can remove but the favorite dram or pretended cordial. Nay more, the repetition of the last night's debauch is looked upon as the best remedy for the sickness of the ensuing day. Mild diluting liquors are rejected as insipid, and some hot stimulant is required for the palate and stomach, without considering, that by such means the action of the heart and arteries is stimulated also; that the lungs are inflamed; and the whole system is relaxed and enfeebled.

CLEANLINESS.

THE want of cleanliness is a fault which admits of no excuse. Where water can be had for nothing, it is surely in the power of every person to be clean. The continual discharge from our bodies by perspiration, renders frequent change of apparel necessary. Changing apparel greatly promotes the secretion from the skin, so necessary for health. When that matter which ought to be carried off by perspiration is either retained in the body or re-absorbed from dirty clothes, it must occasion diseases.

Diseases of the skin are chiefly owing to want of cleanliness.* They may, indeed, be caught by infection, or brought on by poor living, or unwholesome food; but they will seldom continue long where cleanliness prevails. To the same cause must we impute

* Mr. Pott, in his surgical observations, was the first to notice a disease which he called the chimney-sweeper's cancer, now well known, as it is almost peculiar to that unhappy set of people, and of which he has left us a concise and accurate history. This he attributes to neglect of cleanliness, and with great justice. I am convinced that if that part of the body which is the seat of this cruel disease were kept clean by frequent washing, it would never happen. The climbing-boys, as they are called, are certainly the most miserable wretches on the face of the earth; yet, for cleaning chimneys, no such persons are necessary.

According to the opinion of Mr. Earle, (see *Medico Chirurgical Transactions*, vol. xii.) it is invariably produced by the irritation of soot applied to the rugæ or folds of the skin. It is not a common disease, and rarely attacks under the age of thirty, which accounts for its comparative unfrequency.

the various kinds of vermin which infest the human body. These may always be banished by cleanliness alone, and wherever they abound, we have reason to believe it is neglected.

In places where great numbers of people are collected, cleanliness becomes of the utmost importance. It is well known that infectious diseases are communicated by tainted air. Every thing, therefore, which tends to pollute the air, or spread the infection, ought with the utmost care to be guarded against. For this reason, in great towns, no filth of any kind, should be permitted to lie upon the streets.

In many great towns the streets are little better than dung-hills, being frequently covered with ashes, and filth of every kind. Even slaughter-houses, or killing-shambles, are often to be seen in the very centre of great towns. The putrid blood, with which these places are generally covered, cannot fail to taint the air, and render it unwholesome. How easily might this be prevented by active magistrates, who have it always in their power to make proper laws relative to things of this nature, and to enforce the observance of them?

Whatever pretensions people may make to learning, politeness, or civilization, we will venture to affirm, that while they neglect cleanliness they are in a state of barbarity.*

In camps the strictest regard should be paid to cleanliness. By negligence in this matter, infectious diseases are often spread amongst a whole army; and frequently more die of these than by the sword. The Jews, during their encampments in the wilderness, received particular instructions with respect to cleanliness.† The rules enjoined them ought to be observed by all in the like situation. Indeed the whole system of laws delivered to that people has a manifest tendency to promote cleanliness. Whoever considers the nature of their climate, the diseases to which they were liable, and their dirty disposition, will see the propriety of such laws.

It is remarkable, that in the most eastern countries, cleanliness

* In ancient Rome the greatest men did not think cleanliness an object unworthy of their attention. Pliny says, the *Cloacæ*, or common sewers for the conveyance of filth from the city, were the greatest of all the public works; and bestows higher encomiums upon Tarquinius, Agrippa, and others who made and improved them, than those who achieved the greatest conquests.

How truly great does the Emperor Trajan appear when giving directions to Pliny his proconsul, concerning the making of a common sewer for the health and convenience of a conquered city!

† See Deuteron. chap. xxii. ver. 12, 13.

makes a great part of their religion. The Mahometan, as well as the Jewish religion, enjoins various bathings, washings, and purifications. No doubt these might be designed to represent inward purity, but they were at the same time calculated for the preservation of health. However whimsical these washings may appear to some, few things would tend more to prevent diseases than a proper attention to many of them. Were every person, for example, after visiting the sick, handling a dead body, or touching any thing that might convey infection, to wash before he went into company, or sat down to meat, he would run less hazard either of catching the infection himself, or of communicating it to others.

Necessity of frequent ablutions.—Frequent washing not only removes the filth and sordes which adhere to the skin, but likewise promotes the perspiration, braces the body, and enlivens the spirits. How refreshed, how cheerful, and agreeable does one feel on being shaved, washed, and shifted, especially when these offices have been neglected longer than usual !

The eastern custom of washing the feet, though less necessary in this country, is nevertheless very agreeable, and contributes greatly to the preservation of health. This piece of cleanliness would often prevent colds and fevers. Were people careful to bathe their feet and legs in lukewarm water at night, after being exposed to cold or wet through the day, they would seldom experience the ill effects which often proceed from these causes.

In places where great numbers of sick people are collected together, as jails and hospitals, cleanliness ought to be most religiously observed. The very smell in such places is often sufficient to make one sick. It is easy to imagine what effect that is likely to have upon the diseased. In an hospital or infirmary, where cleanliness is neglected, a person in perfect health has a greater chance to become sick than a sick person to get well.

Few things are more unaccountable than that neglect, or rather dread of cleanliness, which appears among those who have the care of the sick: they think it almost criminal to suffer any thing that is clean to come near a person in a fever. If cleanliness be necessary for persons in health, it is certainly more so for the sick. Many diseases may be cured by cleanliness alone; most of them might be mitigated by it; and where it is neglected, the slightest disorders are often changed into the most malignant. The same mistaken care which prompted people to prevent the least admission of fresh air to the sick, seems to have induced them to keep

them dirty. Both these destructive prejudices will, we hope, be soon entirely eradicated.

Cleanliness is certainly agreeable to our nature. We cannot help approving it in others, even though we should not practise it ourselves. It sooner attracts our regard than even finery itself, and often gains esteem where that fails. It is an ornament to the highest as well as the lowest station, and cannot be dispensed with in either. Few virtues are of more importance to society than general cleanliness. It ought to be carefully cultivated every where; but in populous cities it should be almost revered.*

INFECTION AND CONTAGION.

INFECTION is designated a febrific agent, produced by the decomposition of animal and vegetable substances. It usually exists in the state of miasm or gas, and, in this form, occurs in filthy houses, ships, jails, hospitals, and cities; and also in marshes, and fenny and low districts of country. Under the denominations of *marsh*, or *paludal miasmata*, *exhalations of the soil*, *vegeto-animal effluviium*, *malaria*, *human effluvia*, *febrile and putrid contagion*, its various specific effects are detailed in the works of practical writers, as having a decided influence on the human body.

Contagion is a poison generated by morbid animal secretion, possessing the power of inducing a similar morbid action in healthy bodies, whereby it is reproduced, and indefinitely modified. This contagion can only be known by its effects, and can only be divided into genera by classifying it with the diseases it produces: *e. g.* 1st, Contagion communicable exclusively by contact, the species of which are as follows: *itch*, *sypilis*, *sibbens*, *loanda of Africa*, *frambesia* or *yaws*, *elephantiasis*, *hydrophobia*, and *small-pox*. These diseases cannot be conveyed through the medium of the air,

* As it is impossible to be thoroughly clean without a sufficient quantity of water, we would earnestly recommend it to the magistrates of great towns to be particularly attentive to this article. Most great towns are so situated as to be easily supplied with water; and those persons who will not make a proper use of it after it is brought to their hand, certainly deserve to be severely punished. The streets of great towns, where water can be had, ought to be washed every day. This is the only effectual method of keeping them thoroughly clean; and, upon trial, we are persuaded it will be found the cheapest.

Some of the most dreadful diseases incident to human nature might, in my opinion, be entirely eradicated by cleanliness.

but require actual contact. Hence they are strictly contagious, in the etymological sense of the word. 2d, Contagion communicable both by contact and by the atmosphere. These are liable to become epidemic, in contradistinction to those of the first genera. In this the species are, small-pox, measles, and hooping-cough.

One of the laws which govern these contagions is, that they are communicable in every season, in the heat of summer as well as in the cold of winter, in a pure as well as an impure air. Another law is, general *insusceptibility* to future attacks of the same disease, but with exceptions.

Infectious diseases are often communicated by clothes. It is extremely dangerous to wear apparel which has been worn by a person who died of an infectious disease, unless it has been well washed and fumigated, as infection may lodge a long time in it, and afterwards produce very tragical effects. This shows the danger of buying at random the clothes which have been worn by other people.

Many are the causes which tend to diffuse infection through populous cities. The whole atmosphere of a large town is one contaminated mass, abounding with various kinds of infection, and must be pernicious to health. The best advice that we can give to such as are obliged to live in large cities, is to choose an open situation; to avoid narrow, dirty, crowded streets; to keep their own house and offices clean; and to be as much abroad in the open air as their time will permit.

[“Of all the circumstances, the most necessary to uphold the vital power, and protect the body from the influence of noxious agents, is, an abundance of fresh air.”]

“The removal of masses and pools of filth—the draining or enclosure of ponds near towns, where boys drown animals, bathe themselves, and establish a receptacle for every species of filth—and the cleansing and whitewashing of houses—are all objects of the highest consideration.”

Such as wait upon the sick, in infectious diseases, run great hazard. They ought to keep the patient clean, to sprinkle the room where he lies with vinegar or other strong acids, and frequently to admit a stream of fresh air into it.

“Frequent ablution and purification with cold water, enjoined by the politico-religious codes of the eastern climes, is also one of the best means by which weak persons may resist the vicissitudes of climate, and other causes of disease. This means of purification is highly active and important, in addition to the opportunity

of teaching landmen to swim, and developing the muscular strength of the old and young.

“By a combination of artificial heat and ventilation, purification is effected on the easiest terms. Artificial heat is one of the most important means of purification. The diffusion of steam and of hot air through metallic cylinders, has added much of late years to the means of disinfecting human habitations. By warming the atmosphere near apertures at the more elevated parts of rooms or buildings, the expired and tainted air is led to rush out, whilst the currents of cold that supply its place are sufficiently elevated in temperature, to produce no ill effects on the human body in winter.

“As an inducement to those who keep large establishments, or manufactories, to avail themselves of this purification, we will add, that the warming of houses by steam, has many advantages. On a large scale it will prove most economical. The heat it imparts is not partial, like that of a fire; the room is not exposed to the effects of down-draughts, bringing smoke, and producing injurious effects on the lungs; lastly, the temperature is equable, and allows of regulation by the thermometer.

“As a general means of purification, a bright fire is the best guarantee against the consequence of impure air, and human exhalations. It always produces a current of air, which is a most serviceable resource for disinfection in pestilence. The subject of ventilation is one of the highest importance, generally little understood, and still more neglected; but to which we cannot here do justice. It cannot, of course, be overlooked, that the effect of the natural atmosphere on the sick is not merely to carry away effluvia by its currents. Several authors have written on the absorption of nutriment from the atmosphere, by the skin and lungs, and Hufeland even thought, that more nutriment is received in this way than through the lungs.”

Besides heat, and currents of air, there are substances that are known to possess, more or less, the power of disinfection; and however trifling it may appear, we will venture to affirm, that a due attention to those things which tend to diffuse infection, as well as those possessing the power to neutralize it, would be of great importance in preventing diseases.]

As a disinfecting agent, either of the following simple and easily obtained fumigations may be carried at least once a-day through the apartments of the sick; or for the purpose of fumigating apartments where sick people have been lodged:

Take nitrate of potash, (nitre,) four drachms.
Sulphuric acid, (oil of vitriol,) two drachms.

Place them in a saucer upon hot sand; or,

Take muriate of soda, (common salt,) three ounces.
Black oxide of manganese, one ounce.
Sulphuric acid, one ounce.
Water, two ounces.

Mix the three first ingredients, and pour in the water gradually, when visible streams of gas will be elicited, capable of destroying the effluvia generated in the apartment, or about the furniture, or bed-clothes. The saucer, or other earthenware vessel, containing either of these, may be placed in the middle of the room, observing to have, during its use, the doors and windows closely shut.

[A better disinfecting agent, perhaps, than either of the above, is a solution of the chloride of lime, or of the chloride of soda. A solution of either of these salts may be sprinkled over the floor, or placed in the room for a short time, in flat dishes, to favor their evaporation. The use of the chlorides in Egypt, saved the French physicians from the plague, which they were sent to investigate, and appears to have converted some of the Turks from fatalism.

“There is one fact, however, not to be overlooked as regards disinfectant substances which are volatile, viz. that they create an unnatural atmosphere around us. Most remedies in medicine are evils employed to counteract others of greater magnitude—and the disinfectants form no exception to this rule. As no atmosphere but the natural can suit our respiratory system, it has frequently happened that the volatile disinfectants have produced mischief with greater certainty than the evil they were destined to counteract. Their evaporation, therefore, must be measured; they must be placed amidst the greatest currents of air that enter our abodes, that they may be diluted. A constant habit of using such articles without necessity, has produced diseases of the lungs of the most intractable character. Too much caution cannot be exercised in their use.”—For the means of preserving the health of cities and communities by public works and enactments, see an excellent Treatise on “Hygiene” by H. Belinaye, Esq.]

AFFECTIONS OF THE MIND.

MENTAL AFFECTIONS have great influence both in the cause and cure of diseases. How the mind affects the body, will, in all probability, ever remain a secret. It is sufficient for us to know, that

there is established a reciprocal influence between the mental and corporeal parts; and that whatever injures the one, disorders the other.

Anger.—The passion of *anger* ruffles the mind, distorts the countenance, hurries on the circulation of the blood, and disorders the whole vital and animal functions. It often occasions fevers, and other acute diseases; and sometimes even sudden death. This passion is peculiarly hurtful to the delicate, and those of weak nerves. I have known such persons frequently lose their lives by a violent fit of anger, and would advise them to guard against the excess of this passion with the utmost care.

It is not, indeed, always in our power to prevent being angry; but we may surely avoid harboring resentment in our breast. Resentment preys upon the mind, and occasions the most obstinate chronical disorders, which gradually waste the constitution. Nothing shows true greatness of mind more than to forgive injuries; it promotes the peace of society, and greatly conduces to our own ease, health, and felicity.

Such as value health should avoid violent gusts of anger, as they would be the most deadly poison. Neither ought they to indulge resentment, but to endeavor at all times to keep their minds calm and serene. Nothing tends so much to the health of the body as a constant tranquillity of mind.

Fear.—The influence of *fear*, both in occasioning and aggravating diseases, is very great. No man ought to be blamed for a decent concern about life; but too great a desire to preserve it, is often the cause of losing it. Fear and anxiety, by depressing the spirits, not only dispose us to diseases, but often render those diseases fatal which an undaunted mind would overcome.

Sudden fear has generally violent effects. Epileptic fits, and other convulsive disorders, are often occasioned by it. Hence the danger of that practice, so common among young people, of frightening one another. Many have lost their lives, and others have been rendered miserable by frolics of this kind. It is dangerous to tamper with the human passions. The mind may easily be thrown into such disorder as never again to act with regularity.

But the gradual effects of fear prove most hurtful. The constant dread of some future evil, by dwelling upon the mind, often occasions the very evil itself. Hence it comes to pass, that so many die of those very diseases of which they long had a dread,

or which had been impressed on their minds by some accident, or foolish prediction. This, for example, is often the case with women in child-bed. Many of those who die in that situation, are impressed with the notion of their death, a long time before it happens; and there is reason to believe that this impression is often the cause of it.

The methods taken to impress the minds of females with the apprehensions of the great *pain* and *peril* of child-birth, are very hurtful. Few women die in labor, though many lose their lives after it; which may be thus accounted for. A woman after delivery, finding herself weak and exhausted, immediately apprehends she is in danger; but this fear seldom fails to obstruct the necessary evacuations, upon which her recovery depends. Thus the sex often fall a sacrifice to their own imagination, when there would be no danger, did they apprehend none.

It seldom happens, that two or three females in a great town die in child-bed, but their death is followed by many others. Every woman of their acquaintance who is *enciente* dreads the same fate, and the disease becomes epidemical, by the mere force of imagination. This should induce them to despise fear, and by all means to avoid those tattling gossips who are continually buzzing in their ears the misfortunes of others. Every thing that may in the least alarm them, ought with the greatest care to be guarded against.

Grief.—Grief is the most destructive of all the passions. Its effects are permanent; and when it sinks deep into the mind, it generally proves fatal. Anger and fear, being of a more violent nature, seldom last long; but grief often changes into a fixed melancholy, which preys upon the spirits, and wastes the constitution. This passion ought not to be indulged. It may generally be conquered at the beginning; but when it has gained strength, all attempts to remove it are vain.

No person can prevent misfortunes in life; but it shows true greatness of mind to bear them with serenity. Many persons make a merit of indulging in grief, and when misfortunes happen, they obstinately refuse all consolation, till the mind, overwhelmed with melancholy, sinks under the load. Such conduct is not only destructive to health, but inconsistent with reason, religion, and common sense.

Change of ideas is as necessary for health as change of posture. When the mind dwells long upon one subject, especially of a disa-

greeable nature, it hurts the whole functions of the body. Hence grief, indulged, spoils the digestion and destroys the appetite; by which means the spirits are depressed, the nerves relaxed, the bowels inflated with wind, and the humors, for want of fresh supplies of chyle, vitiated. Thus many an excellent constitution has been ruined by a family misfortune, or any thing that occasions excessive grief.

It is utterly impossible that any person of a dejected mind should enjoy health. Life may, indeed, be dragged out for a few years; but whoever would live to a good old age, must be good-humored and cheerful. This, indeed, is not altogether in our own power; yet our temper of mind, as well as our actions, depend greatly upon ourselves. We can either associate with cheerful or melancholy companions, mingle in the amusements and offices of life, or sit still and brood over our calamities as we choose. These, and many such things, are certainly in our power, and from these the mind generally takes its cast.

The variety of scenes which present themselves to the senses, were certainly designed to prevent our attention from being too long fixed upon any one object. Nature abounds with variety, and the mind, unless fixed down by habit, delights in contemplating new objects. This at once points out the method of relieving the mind in distress. Turn the attention frequently to new objects. Examine them for some time. When the mind begins to recoil, shift the scene. By this means a constant succession of new ideas may be kept up, till the disagreeable ones entirely disappear. Thus, travelling, the study of any art or science, reading or writing on such subjects as deeply engage the attention, will sooner expel grief than the most sprightly amusements.

It has already been observed, that the body cannot be healthy unless it be exercised; neither can the mind. Indolence nourishes grief. When the mind has nothing else to think of but calamities, no wonder that it dwells there. Few people who pursue business with attention are hurt by grief. Instead, therefore, of abstracting ourselves from the world or business when misfortunes happen, we ought to engage in it with more than usual attention, to discharge with double diligence the functions of our station, and to mix with friends of a cheerful and social temper.

Innocent amusements are by no means to be neglected. These, by leading the mind insensibly to the contemplation of agreeable objects, help to dispel the gloom which misfortunes cast over it. They make time seem less tedious, and have many other happy effects.

Some persons, when overwhelmed with grief, betake themselves to drinking. This is making the cure worse than the disease. It seldom fails to end in the ruin of fortune, character, and constitution.

Love.—Love is perhaps the strongest of all the passions. At least when it becomes violent, it is less subject to the control either of the understanding or will, than any of the rest. Fear, anger, and several other passions, are necessary for the preservation of the individual, but love is necessary for the continuation of the species itself; it was therefore proper that this passion should be deeply rooted in the human breast.

Though love be a strong passion it is seldom so rapid in its progress as several of the others. Few persons fall desperately in love all at once. We would therefore advise every one, before he tampers with this passion, to consider well the probability of his being able to obtain the object of his wishes. When that is not likely, he should avoid every occasion of increasing it. He ought immediately to flee the company of the beloved object; to apply his mind attentively to business or study; to take every kind of amusement; and above all, to endeavor, if possible, to find another object which may engage his affections, and which it may be in his power to obtain.

There is no passion with which people are so apt to tamper as love, although none is more dangerous. Some men make love for amusement, others from mere vanity, or on purpose to show their consequence with the fair.

This is perhaps the greatest piece of cruelty which any one can be guilty of. What we eagerly wish for, we easily credit. Hence the too credulous fair are often betrayed into a situation which is truly deplorable, before they are able to discover that the pretended lover was only in jest. But there is no jesting with this passion. When love has got to a certain height, it admits of no other cure but the possession of its object, which in this case ought always, if possible, to be obtained.

Religious Melancholy.—Many persons of a religious turn of mind behave as if they thought it a crime to be cheerful. They imagine the whole of religion consists in certain mortifications, or denying themselves the smallest indulgence, even in the most innocent amusements. A perpetual gloom hangs over their countenances, while the deepest melancholy preys upon their minds. At

length the fairest prospects vanish, every thing puts on a dismal appearance, and those very objects which ought to give delight, afford nothing but disgust. Life itself becomes a burden, and the unhappy wretch, persuaded that no evil can equal what he feels, often puts an end to his miserable existence.

It is a pity that religion should be so far perverted, as to become the cause of those very evils which it was designed to cure. Nothing can be better calculated than *true religion* to raise and support the mind of its votaries under every affliction that can befall them. It teaches that even the sufferings of this life are preparatory to the happiness of the next; and that all who persist in a course of virtue shall at length arrive at complete felicity.

Persons whose business it is to recommend religion to others, should beware of dwelling too much on gloomy subjects. That peace and tranquillity of mind, which true religion is calculated to inspire, is a more powerful argument in its favor, than all the terrors that can be uttered. Terror may indeed deter men from outward acts of wickedness, but can never inspire them with that love of God, and real goodness of heart, in which alone true religion consists.

To conclude; the best way to counteract the violence of any passion, is to keep the mind closely engaged in some useful pursuit.

I have often heard that the late Lord Kaimes, when he saw any literary friend sinking under the pressure of melancholy, or some other corroding passion, always gave this advice in a few emphatic words, "Write a book;" which he believed to be an infallible remedy. I also knew the author of a very beautiful elegy cured of his grief for a wife, whom he tenderly loved, by studying how to express the greatness of his loss, and the pungency of his sorrows in the most plaintive and affecting strains. Indeed, the earnest direction of our thoughts to some important object is, as I before hinted, the surest method of subduing passions which may stubbornly resist the control of reason.

THE NATURAL EVACUATIONS.

THE principal evacuations from the human body are those by *stool*, *urine*, and *insensible perspiration*. None of these can be long obstructed without impairing the health. When that which

ought to be thrown out of the body is too long retained, it not only occasions a *plethora*, or too great fulness of the vessels, but acquires qualities which are hurtful to the health.

Few things conduce more to health than keeping the body regular. When the *fæces* lie too long in the bowels, they cause disease; and when they are too soon discharged, the body is not sufficiently nourished. A medium is therefore to be desired which can only be obtained by regularity in diet, sleep, and exercise. Whenever the body is not regular, there is reason to suspect a fault in one or other of these.

Persons who eat and drink at irregular hours, and who eat various kinds of food, and drink of several different liquors at every meal, have no reason to expect either that their digestion will be good, or discharges regular. Irregularity in eating and drinking disturbs every part of the animal economy, and never fails to occasion diseases. Either too much or too little food will have this effect. The former, indeed, generally occasions looseness, and the latter costiveness; but both have a tendency to hurt the health.

It would be difficult to ascertain the exact number of stools which may be consistent with health, as these differ in the different periods of life, in different constitutions, and even in the same constitutions under a different regimen of diet, exercise, &c. It is, however, generally allowed, that one stool a-day is sufficient for an adult, and that more or less is hurtful. But this, like most general rules, admits of many exceptions. I have known persons in perfect health who did not go to stool above once a week.* Such a degree of costiveness, however, is not safe; though the person who labors under it may for some time enjoy tolerable health, yet at length it may occasion diseases.

One method of procuring a stool every day is to rise betimes, and go abroad in the open air. Not only the posture in bed is unfavorable to regular stools, but also the warmth. This, by promoting perspiration, lessens all the other discharges.

The method recommended for this purpose, by Mr. Locke, is likewise very proper, *viz. to solicit nature, by going regularly to stool every morning, whether one has a call or not.* Habits of this kind may be acquired, which will in time become natural.

Persons who have frequent recourse to medicines for preventing costiveness seldom fail to ruin their constitution. Purging medi-

* Some persons have told me that they did not go to stool above once a month.

cines frequently repeated weaken the bowels, hurt the digestion, and every dose makes way for another, till at length they become as necessary as daily bread. Those who are troubled with costiveness ought rather, if possible, to remove it by diet than drugs. They should likewise go thinly clothed, and avoid every thing of an astringent or of an heating nature. The diet and other regimen necessary in this case will be found under the article *Costiveness*, where this state of the bowels is treated as a disease.

Such persons as are troubled with an habitual looseness, ought likewise to suit their diet to the nature of their complaints. They should use food which braces and strengthens the bowels, and which is rather of an astringent quality, as wheat-bread made of the finest flour, cheese, eggs, or rice boiled in milk. Their drink should be red port, claret, brandy and water, in which toasted bread has been boiled, and such like.

As an habitual looseness is often owing to an obstructed perspiration, persons affected with it ought to keep their feet warm, to wear flannel next their skin, and take every other method to promote the perspiration. Further directions with regard to the treatment of this disease will be found under the article *Looseness*.

Urine.—So many things tend to change both the quantity and appearances of the urine, that it is very difficult to lay down any determined rules for judging of either.* Dr. Cheyne says, the urine ought to be equal to three-fourths of the liquid part of our aliment. But suppose any one were to take the trouble of measuring both, he would find that every thing which altered the degree of perspiration would alter this proportion, and likewise that different kinds of aliment would afford very different quantities of urine. Though for these, and other reasons, no rule can be

* It has long been an observation among physicians, that the appearances of the urine are very uncertain, and very little to be depended on. No one will be surprised at this, who considers how many ways it may be affected, and, consequently, have its appearance altered. The passions, the state of the atmosphere, the quantity and quality of the food, the exercise, the clothing, the state of the other evacuations, and numberless other causes, are sufficient either to induce a change in the quantity or appearance of the urine. Any one who attends to this will be astonished at the impudence of those daring quacks, who pretend to find out diseases, and prescribe to patients, from the bare inspection of their urine. These impostors, however, are very common all over Britain, and, by the amazing credulity of the populace, many of them amass considerable fortunes. Of all the medical prejudices which prevail in this country, that in favor of *urine doctors* and *steam doctors* is the strongest. Many have still an unlimited faith in their skill, although it has been demonstrated that no one of them is able to distinguish the urine of a horse, or any other animal, from that of a man.

given for judging the precise quantity of urine which ought to be discharged, yet a person of common sense will seldom be at a loss to know when it is in either extreme.

As a free discharge of urine not only prevents but actually cures many diseases, it ought by all means to be promoted; and every thing that may obstruct it should be carefully avoided. Both the secretion and discharge of urine are lessened by a sedentary life, sleeping on beds that are too soft and warm, food of a dry and heating quality, liquors which are astringent and heating, as red port, claret, and such like. Those who have reason to suspect that their urine is in too small quantity, or who have any symptoms of the gravel, ought not only to avoid these things, but whatever else they find has a tendency to lessen the quantity of their urine.

When the urine is too long retained, it is not only resorbed, or taken up again into the mass of fluids, but by stagnating in the bladder it becomes thicker, the more watery parts flying off first, and the more gross and earthy remaining behind. By the constant tendency which these have to concrete, the formation of stones and gravel in the bladder is promoted. Hence it comes to pass that indolent and sedentary people are much more liable to these diseases than persons of a more active life.

Many persons have lost their lives, and others have brought on very tedious, and even incurable disorders, by retaining their urine too long, from a false delicacy. When the bladder has been over-distended, it often loses its power of action altogether, or becomes paralytic, by which means it is rendered unable either to retain the urine, or expel it properly. The calls of nature ought never to be postponed. Delicacy is doubtless a virtue, but that can never be reckoned true delicacy which induces any one to risk his health, or hazard his life.

But the urine may be in too great, as well as too small a quantity. This may be occasioned by drinking large quantities of weak watery liquors, by the excessive use of alkaline salts, or any thing that stimulates the kidneys. This disorder very soon weakens the body, and induces a consumption. It is difficult to cure, but may be mitigated by strengthening diet and proper medicines, such as are recommended under the article Diabetes, or excessive discharge of urine.

Perspiration.—Insensible perspiration is generally reckoned the greatest of all the discharges from the human body. It is of so

great importance to health, that few diseases attack us while it goes properly on; but when it is obstructed, the whole frame is soon disordered.* This discharge, however, being less perceptible than any of the rest, is consequently, less attended to. Hence it is that acute fevers, rheumatisms, or agues, often proceed from obstructed perspiration, before we are aware of its having taken place.

On examining patients, we find most of them impute their diseases either to violent colds which they had caught, or to slight ones which they had neglected. For this reason, instead of a critical inquiry into the nature of the perspiration, its difference in different seasons, climates and constitutions, we shall endeavor to point out the causes which most commonly obstruct it, and to show how far they may be either avoided, or have their influence counteracted by timely care.

One of the most common causes of obstructed perspiration,† or catching cold, in this country, is the changeableness of the weather, or state of the atmosphere. The degrees of heat and cold are not only very different in the different seasons of the year, but often change almost from one extreme to another in a few days, and sometimes even in the course of one day. That such changes must affect the state of the perspiration is obvious to every one.

The best method of fortifying the body against the changes of

* Sanctorius, an Italian physician, was the first that directed the attention of the faculty to the cutaneous and pulmonary transpiration, which he proved to exceed the other secretions considerably in weight; and he maintained that this function must have a considerable influence on the system, and was deserving of great consideration in the treatment of diseases. There is, doubtless, much of truth in this general observation; but in its application to practice, he appears to have gone to an extravagant length, and to have considerably contributed to prolong the humoral pathology, which referred all diseases to a vitiated state of the fluids, which is now well known to be the effect instead of the cause.

† From the time of Sanctorius, colds, coughs, fevers, and other diseases, have been attributed, by many, to the suppression of perspiration, although there was no direct experiment to prove it. That this may sometimes act as a cause there can be little doubt, but not so frequently as has been imagined; for we see people sometimes perspiring a great deal, at other times not at all, and without any bad effect. A man, in fine, enjoys as good health in winter as in summer; in cold as in hot countries; and, besides that perspiration is carried on to a great extent by the lungs, nature has also taken care to guard against obstructed perspiration, by making it a vicarious secretion with the urine; for when the former is increased the latter is diminished, and *vice versa*. The matter of perspiration, nevertheless, appears to be useless to the human frame, and perhaps contains materials that might prove hurtful if retained; hence, when obstructed, it may produce some complaints and aggravate others; although many of the diseases attributed to retained perspiration arise from mere torpor of the skin; and the effect is here taken for the cause. See *Diaphoretics, Cold Bath, &c.*

the weather is, to be abroad every day. Those who keep most within doors, are most likely to catch cold. Such persons generally render themselves so delicate, as to feel even the slightest changes in the atmosphere, and by their pains, coughs, and oppressions of the breast, they become a kind of living barometers.

Wet Clothes.—Wet clothes not only by their coldness obstruct the perspiration, but their moisture, by being absorbed, or taken up into the body, greatly increases the danger. The most robust constitution is not proof against the danger arising from wet clothes; they daily occasion fevers, rheumatisms, and other fatal disorders, even in the young and healthy.

It is impossible for people who go frequently abroad to avoid sometimes being wet. But the danger might generally be lessened, if not wholly prevented, by changing their clothes soon; when this cannot be done, they should keep in motion till they be dry. So far are many from taking this precaution, that they often sit or lie down in the fields with their clothes wet, and frequently sleep even whole nights in this condition. The frequent instances which we have of the fatal effects of this conduct, ought certainly to deter all from being guilty of it.

Wet Feet.—Wet feet often occasion fatal diseases. The colic, inflammations of the breast and of the bowels, the iliac passion, and cholera morbus, are often occasioned by wet feet. Habit will, no doubt, render this less dangerous; but it ought as far as possible to be avoided. The delicate, and those who are not accustomed to have their clothes or feet wet, should be peculiarly careful in this respect.

Night Air.—The perspiration is often obstructed by night air; even in summer this ought to be avoided. The dews which fall plentifully after the hottest day, make the night more dangerous than when the weather is cool. Hence in warm countries, the evening dews are more hurtful than where the climate is more temperate.

It is very agreeable after a warm day to be abroad in a cool evening; but this is a pleasure to be avoided by all who value their health. The effects of evening dews are gradual, indeed, and almost imperceptible; but they are not the less to be dreaded: we would therefore advise travellers, laborers, and all who are much heated by day, carefully to avoid them. When the perspi-

ration has been great, these become dangerous in proportion. By not attending to this, in flat marshy countries, where the exhalations and dews are copious, laborers are often seized with intermitting fevers, quinsies, and other dangerous diseases.

Damp Beds.—Beds become damp, either from their not being used, standing in damp houses, or in rooms without fire, or from the linen not being dry when laid on the bed. Nothing is more to be dreaded by travellers than damp beds. When a traveller, cold and wet, arrives at an inn, he may, by means of a good fire, and a dry bed, have the perspiration restored; but if he be put into a cold room, and laid in a damp bed, it will be more obstructed, and the worst consequences will ensue. Travellers should avoid inns which are noted for damp beds, as they would a house infected with the plague, as no man, however robust, proof against the danger arising from them.

But inns are not the only places where damp beds are to be met with. Beds kept in private families for the reception of strangers are often equally dangerous. All kinds of linen and bedding, when not frequently used, become damp. How then is it possible that beds which are not slept in above two or three times a-year, should be safe? Nothing is more common than to hear people complain of having caught cold by changing their bed. The reason is obvious: were they careful never to sleep in a bed but what was frequently used, they would seldom find any ill consequences from a change.

Nothing is more to be dreaded by a delicate person when on a visit, than being laid in a bed which is kept on purpose for strangers. That ill-judged piece of complaisance becomes a real injury. All the bad consequences from this quarter might easily be prevented in private families, by causing their servants to sleep in the spare beds, and resign them to strangers when they come. In inns, where the beds are used almost every night, nothing else is necessary than to keep the rooms well seasoned by frequent fires, and the linen dry.

That baneful custom, said to be practised in many inns, of damping sheets, and pressing them, in order to save washing, and afterwards laying them on the beds, ought, when discovered, to be punished with the utmost severity. It is really a species of murder, and will often prove as fatal as poison or gun-shot. Indeed no linen, especially if it has been washed in winter, ought to be used till it has been exposed for some time to the fire; nor is this

operation less necessary for linen washed in summer, provided it has lain for any length of time. This caution is the more needful, as gentlemen are often exceedingly attentive to what they eat or drink at an inn, yet pay no regard to a circumstance of much more importance.*

Damp Houses.—Damp houses frequently produce the like ill consequences: for this reason those who build should be careful to choose a dry situation. A house which stands on a damp marshy soil or deep clay, will never be thoroughly dry. All houses, unless where the ground is exceedingly dry, should have the first floor a little raised. Servants and others, who are obliged to live in cellars and sunk stories, seldom continue long in health: masters ought surely to pay some regard to the health of their servants, as well as to their own.

Nothing is more common than for people, merely to avoid some trifling inconvenience, to hazard their lives by inhabiting a house almost as soon as the masons and plasterers have done with it; such houses are not only dangerous from their dampness, but likewise from the smell of lime and paint. The asthmas, consumptions, and other diseases of the lungs, so incident to people who work among these articles, are sufficient proofs of their being unwholesome.

Rooms are often rendered damp by an unseasonable piece of cleanliness; I mean the pernicious custom of washing them immediately before company is put into them. Most people catch cold if they sit but a very short time in a room that has been lately washed; the delicate ought carefully to avoid such a situation, and even the robust are not always proof against its influence.†

Sudden Transitions from Heat to Cold.—The perspiration is commonly obstructed by sudden transitions from heat to cold. Colds are seldom caught, unless when people have been too much heated. Heat rarifies the blood, quickens the circulation, and increases the perspiration; but when these are suddenly checked, the consequences must be bad. It is, indeed, impossible for laborers

* If a person suspect that his bed is damp, the simple precaution of taking off the sheets and lying in the blankets, with all, or most of his clothes on, will prevent all the danger. I have practised this for many years, and never have been hurt by damp beds, though no constitution, without care, is proof against their baneful influence.

† People imagine if a good fire is made in a room after it has been washed, that there is no danger from sitting in it; but they must give me leave to say that this increases the danger. The evaporation excited by the fire generates cold, and renders the damp more active.

not to be too hot upon some occasions; but it is generally in their power to let themselves cool gradually, to put on their clothes when they leave off work, to make choice of a dry place to rest themselves in, and to avoid sleeping in the open fields. These easy rules, if observed, would often prevent fevers and other fatal disorders.

It is very common for people, when hot, to drink freely of cold water, or small liquors. This conduct is extremely dangerous. Thirst, indeed, is hard to bear, and the inclination to gratify that appetite frequently gets the better of reason, and makes us do what our judgment disapproves. Every man, however, knows, if his horse be permitted to drink his belly-full of cold water after violent exercise, and be immediately put into the stable, or suffered to remain at rest, that it will kill him. This they take the utmost care to prevent. It were well if they were equally attentive to their own safety.

Thirst may be quenched many ways without swallowing large quantities of cold liquor. The fields afford variety of acid fruits and plants, the very chewing of which would abate thirst. Water kept in the mouth for some time, and spit out again, if frequently repeated, will have the same effect. If a bit of bread be eaten along with a few mouthfuls of water, it will both quench thirst more effectually, and make the danger less. When a person is extremely hot, a mouthful of brandy, or other spirits, if it can be obtained, ought to be preferred to any thing else. But if any one has been so foolish, when hot, as to drink freely of cold liquor, he ought to continue his exercise at least till what he drank be thoroughly warmed upon his stomach.

It would be tedious to enumerate all the bad effects which flow from drinking cold liquors when the body is hot. Sometimes this has occasioned immediate death. Hoarseness, quinsies, and fevers of various kinds, are its common consequences. Neither is it safe when warm to eat freely of raw fruits, salads or the like. These, indeed, have not so sudden an effect upon the body as cold liquors, but they are notwithstanding dangerous, and ought to be avoided.

Sitting in a warm room, and drinking hot liquors till the pores are quite open, and immediately going into the cold air, is extremely dangerous. Colds, coughs, and inflammations of the breast, are the usual consequences of this conduct; yet nothing is more common than for people, after they have drank warm liquors for several hours, to walk or ride a number of miles in the coldest night, or to ramble about in the streets.

People are very apt, when a room is hot, to throw open a window, and to sit near it. This is a most dangerous practice. Any person had better sit without doors than in such a situation, as the current of air is directed against one particular part of the body. Inflammatory fevers, quinsies, and consumptions have often been occasioned by sitting or standing thinly clothed near an open window. Nor is sleeping with open windows less to be dreaded. That ought never to be done, even in the hottest season, unless the window is at a distance. I have known mechanics frequently contract fatal diseases, by working stripped at an open window, and would advise all of them to beware of such a practice.*

Few things expose people more to catch cold than keeping their own houses too warm: such persons may be said to live in a sort of hot houses; they can hardly stir abroad to visit a neighbor but at the hazard of their lives. Were there no other reason for keeping houses moderately cool, that alone is sufficient; but no house that is too hot can be wholesome; heat destroys the spring and elasticity of the air, and renders it less fit for expanding the lungs, and the other purposes of respiration. Hence it is that consumptions and other diseases of the lungs prove so fatal to people who work in forges, glass-houses, and the like.

Some are even so imprudent as to plunge themselves, when hot, in cold water.† Not only fevers, but madness itself, has frequent-

* Although this long uncontradicted opinion, which daily observation confirms, has also been contradicted by Sir Arthur Clarke, the analogies are too wide to bear comparison. It will, we believe, be universally admitted that a current of air pressing upon an overheated body, although it might not prove "*inevitably fatal*," is neither consistent with safety nor prudence, while that body is in a passive state; and in an active one it is better to be removed some distance from a voluminous rush of air, which would be the means of keeping perspiration in check that was laboring to be set free, thereby counteracting the effects of exertion.

† A modern writer (Sir Arthur Clarke) entertains, we rather suspect, an untenable opinion on this particular subject; nor do we conceive in what manner sudden external transitions should be attended with less danger than such as are internally applied. "It has been very commonly supposed," observes Sir Arthur, "even by medical men, that immersion in the cold-bath, when the body was considerably heated with exercise or other exertion, is a dangerous practice; and, accordingly, it is a general custom with bathers who find themselves overheated, to wait till they become cool, before they plunge into the bath. This opinion and practice has been ably controverted by the late Dr. Currie, who has shown, both from theory and experience, that the opinion is erroneous, and the practice injudicious. This is so true, that for some years he has directed infirm persons to use a degree of exercise before immersion, as may produce an increased action of the vascular, with some increase of heat, and thus secure a force of re-action under the shock, which otherwise might not always take place." We think Sir Arthur has brought Dr. Currie forward rather untimely; for it is evident the latter alludes to infirm persons, convalescents, with whom almost invariably the heat of the body, accompanied with a sense of chillness is below the natural

ly been the effect of this conduct. Indeed it looks too like the action of a madman to deserve a serious consideration.

The result of all these observations is, that every one ought to avoid, with the utmost attention, all sudden transitions from heat to cold, and to keep the body in as uniform a temperature as possible ; or where that cannot be done, to take care, when heated, to let it cool gradually.

People may imagine that too strict an attention to these things would tend to render them delicate. So far, however, is this from being my design, that the very first rule proposed for preventing colds is, to harden the body, by inuring it daily to the open air.

I shall put an end to what relates to this part of my subject, by giving an abstract of the justly celebrated advice of Celsus, with respect to the preservation of health : “ A man,” says he, “ who is blessed with good health, should confine himself to no particular rules either with respect to regimen or medicine. He ought frequently to diversify his manner of living ; to be sometimes in town, sometimes in the country ; to hunt, sail, indulge himself in rest, but more frequently to use exercise. He ought to refuse no kind of food that is commonly used, but sometimes to eat more and sometimes less ; sometimes to make one at an entertainment, and sometimes to forbear it ; to make rather two meals a-day than one, and always to eat heartily, provided he can digest it. He ought neither too eagerly to pursue, nor too scrupulously to avoid intercourse with the fair sex : pleasures of this kind, rarely indulged, render the body alert and active ; but when too frequently repeated, weak and languid. He should be careful in time of health not to destroy, by excesses of any kind, that vigor of constitution which should support him under sickness.”

standard : it is judicious, therefore, enough that such people should use a *degree* of exercise to enable them to resist the shock of the cold-bath, and to secure a re-action under it, which otherwise they could not withstand. This practice, however, applies equally to persons in health, whom we would caution never to use the cold-bath at a time when a cold sensation pervades the whole body, any more than to plunge into it at a time when the body is overheated ; although both of these conditions may admit of being considerably regulated by the feelings of the individual. “ The popular opinion, therefore,” says Sir Arthur Clarke, upon the preceding grounds, “ that it is safest to go perfectly cool into the water is an *unfounded error* productive of injurious consequences.” Practice and experience, with all deference to such an opinion, have proved the reverse.

PART II.

THE KNOWLEDGE AND CURE OF DISEASES.

[PHYSIOGNOMY OF DISEASES.—The term Physiognomy applied to medicine, includes much more than the appearance or expression of the countenance. It embraces the whole exterior of the sick, so far as it can lead us to a knowledge of the nature of the disease. The circumstances and parts which chiefly demand our attention, are, the *countenance*, the *tongue*, the *teeth*, the *respiration*, *expectoration*, the *excrements*, the *decubitus*, or *posture*, and the *appearance of the extremities*.

1. *Of the Countenance*.—There are several diseases, the existence of which may be discovered, by an experienced person, from the appearance of the countenance. Among them are Jaundice, Dropsy, Consumption, confirmed Diarrhœa, and all Eruptive diseases. Besides the yellowness of the skin in Jaundice, there is a certain dullness of the intellectual faculties, bordering on moroseness, so frequently attendant on complaints of the liver. The countenance of Phthisis Pulmonalis, or Consumption, is known to every one. There is a circumscribed spot in the skin of the cheek, very florid and bright; a vivid, sparkling eye, and lips of a lively ruby color. The hectic flush is sometimes perceptible in Peripneumony. The countenance which accompanies Pestilential Fevers is difficult of description. A red, suffused, or muddy eye: a contracted, frowning brow; and a dusky, red or livid color of the skin, are commonly the characteristic appearances. In very bad cases of the Winter Epidemic, which sometimes sweeps over the United States with fatal violence, the appearance of the countenance is more like that of bronze than a livid or leaden color. In the diseases of children, a knowledge of this branch of the physiognomy of disease is of especial use. The countenance greatly changed in any respect from its healthy aspect, indicates danger. Hence, the most common observer, will often remark that such a person is ill, because he does not look like himself. The return of the natural countenance is a favorable indication.

The appearance of the eyes in sickness is very various. "If,"

says Hippocrates, "they avoid the light, or weep involuntarily, or are drawn on one side, or are of unequal size, or are red in the whites, or have dark veins on their surface, or are elevated, or have irregular motions, or are thrust out from their orbits, or are hollow, or are squalid, without brightness—all these are indicative of great danger." To this catalogue may be added, the dilatation of the pupil on exposure to light, involuntary rolling of the eyeball, and sleeping with the eyes turned up under the upper eyelid, the lids being only partially closed. A dilated pupil indicates an oppressed brain; a contracted one points to the actual existence or the approach of inflammation of that organ; and sleep, with the eye-lids partially closed, is symptomatic of a diseased condition of the alimentary canal. Sparkling, ardent, or fixed eyes, indicate delirium. There is a state of the countenance consisting in a kind of sarcastic smile. It is termed *risus sardonius*, and is a symptom of bad import. It has been supposed to be expressive of inflammation of the diaphragm or midriff. It is almost always symptomatic of approaching delirium, and is associated with inflammation of the stomach. It is always present in cases of poisoning by the introduction of the seeds or extract of the Jamestown Weed into the stomach.

2. *The Tongue.*—The tongue is an excellent index of the condition of the biliary organs and alimentary canal. When yellow or green, it is almost always indicative of a bilious attack. In inflammation it is generally white. The livid, dark, or chopped tongue, is a symptom of great danger. Sometimes it appears like raw beef, as if the skin were entirely removed. This is also an unfavorable circumstance. Tremors of the tongue when projected out of the mouth, are a dangerous sign; as is, also, a natural appearance of that organ in pestilential fevers. But when it clears after having been foul; when it becomes moist after having been dry; and steady from a trembling condition, it is symptomatic of a favorable change.

There is a remarkable difference between the appearance of the tongue in diseases of the lungs, and that which is exhibited in those of the stomach and bowels. When the pulmonary organs are affected, it continues clean, and sometimes becomes even more so than natural. In complaints of the alimentary system, it is generally loaded with fur, or covered with viscid matter. This will assist in distinguishing between these two classes of disease in doubtful cases.

3. *The Teeth*.—When they become foul, and are of a yellow, or green, or dark color, they indicate the presence of malignant typhus action in the system, or great disturbance of the vital organs. Grating the teeth is also a sign of visceral disease, unless the patient has been in the habit of doing the same in health. Grinding and gnashing of the teeth is often the harbinger of approaching delirium. It is also a symptom of worms in children, when they grind their teeth while sleeping.

4. *Respiration*.—When laborious, and accompanied with heaving of the shoulders, it is expressive of the utmost danger. Quick respiration, resembling the quick, jerking motion of the pulse, is always to be dreaded. If frequent and small, it is indicative of inflammation of the parts employed in breathing. As often as inflammation of the lungs or pleura occurs, the respiration becomes more frequent and confined. It is hailed as a favorable omen, when the patient can make a full and free inspiration, in diseases of the chest. An unequal respiration is unfavorable; as it indicates a difficult passage of the blood through the lungs. In acute diseases, where the stomach is affected, *hiccough* is a sign of great danger; but it is not always so in nervous affections. In all cases where the breathing is accompanied by considerable motion of the nostrils, it may be concluded that there is much danger.

5. *Expectoration*.—When mucus is discharged from the lungs without difficulty, it is always auspicious. It is a good sign when of a natural yellow in the commencement of Pleurisy; but when it is thin, dark and bloody, with heavy inspiration, the danger is uniformly great. Light and frothy expectoration, in acute diseases, affords little relief, but no great danger is pointed out. A discharge of purulent matter is always more or less alarming, as it indicates the existence of an abscess in the lungs, or perhaps a high degree of inflammation in the lining membrane of the wind-pipe. The most favorable expectoration is a yellow tough mucus: it appears to afford most relief in injuries of the lungs.

6. *The Excrementitious discharges*.—These consist of the fæces, urine and perspiration, and have already been treated of at some length. They are mentioned again for the purpose of pointing out some of their appearances indicative of disease.

As regards the fæces, they are liable to many derangements. 1st. Watery stools is a sign of great relaxation and debility, or a high degree of irritation in the bowels. 2d. Lumpy or scybalous

discharges, with mucus, slime or blood, show inflammation of the bowels, and are more likely to occur in the early stage of Dysentery. 3d. Deep green, yellow, or black tarry stools, denote a preternatural quantity of bile in the intestines. 4th. Clay-like, ash-colored evacuations, denote a want of bile. Excrementitious matter mixed with the food, always attends imperfect digestion, or such irritation of the alimentary canal that the food passes too quickly through it to be perfectly digested.

In relation to the *urine*, we are disposed with the ancient physicians to regard its appearance as a principal indication of the nature of diseases, and nearly as much to be relied on as the state of the alvine evacuations. 1st. The urine discharged in excess, and of a pallid color, always denotes relaxation of the kidneys, congestion of those organs, or a serious disturbance of the brain, or some other part of the nervous system. 2d. Deficient discharge of urine denotes great irritation of the urinary organs, or imperfect absorption. 3d. When the urine is loaded with saccharine matter, or has a milky appearance, it indicates a diseased state of the chylopoetic organs, and particularly of the stomach. 4th. Copious discharges of urine, though generally favorable at the crisis of a case, are not always so. They uniformly indicate the approach of convalescence in Rheumatism and Gout; but invariably denote imminent danger in affections of the lungs and brain.

Perspiration occurring at the crisis of acute diseases, is uniformly favorable, when accompanied by warmth and softness, with some slight color or suffusion of the skin. Cold sweats and a pallid skin are alarming symptoms, except when they occur in some nervous affections.

7. *Decubitus* or *Posture*.—If the sick can lie only on one side, it is a bad symptom—if on neither, it is still worse. It is alarming when they assume any posture different from that which they usually assume in health. Restlessness and tossing of the hands and feet are signs of danger. If the patient lies on his belly, contrary to his usual custom, either delirium or severe pain in the bowels is indicated. But the worst symptom of all, is, when he lies on his back, sliding downwards towards the foot of the bed, his knees open and bent to each side, and his mouth open during sleep.

8. *Of the Extremities*.—An unusual temperature of the extremities is unfavorable. Cold wrists and warm hands are signs

of great danger, and may be considered universally, perhaps, as a fatal symptom. Cold feet are alarming, but not so much so as cold wrists. The former is constitutional with some persons, and when it occurs in disease, inquiries should always be made relative to this point. Cold breath is a fatal symptom, yet I have known persons attacked with malignant cholera recover after the appearance of that symptom. Chilliness continuing longer than usual denotes considerable danger; so, also, do intense sensations of heat in the advanced stages of disease, especially if they be internal, as in the stomach, bowels, and lungs.]

DEFINITION OF DISEASES.—Every disease may be considered as an assemblage of symptoms, and must be distinguished by those which are most obvious and permanent. Instead, therefore, of giving a classical arrangement of diseases, according to the systematic method, it will be more suitable, in a work of this nature, to give a full and accurate description of each particular disease as it occurs; and, where any of the symptoms of one disease have a near resemblance to those of another,* to take notice of that circumstance, and at the same time to point out the peculiar or characteristic symptoms by which it may be distinguished. By a due attention to these, the investigation of diseases will be found to be a less difficult matter than most people would at first be ready to imagine.

A proper attention to the patient's age, sex, temper of mind, constitution, and manner of life, will likewise greatly assist, both in the investigation and treatment of diseases.

In childhood the fibres are lax and soft, the nerves extremely irritable, and the fluids thin: whereas in old age the fibres are rigid, the nerves become almost insensible, and many of the vessels imperviable. These and other peculiarities render the diseases of the young and aged very different, and of course they must require a different method of treatment.

Females are liable to many diseases which do not afflict the other sex: besides, the nervous system being more irritable in them than in men, their diseases require to be treated with greater caution. They are less able to bear large evacuations; and all stimulating medicines ought to be administered to them with a sparing hand.

* Physicians express these symptomatic characters by the word *Diagnosis*; viz. the signs by which one disease may be distinguished from another disease. Hence those symptoms which distinguish such affections are termed *diagnostic signs*.

Particular constitutions not only dispose persons to peculiar diseases, but likewise render it necessary to treat these diseases in a peculiar manner. A delicate person, for example, with weak nerves, who lives mostly within doors, must not be treated, under any disease, precisely in the same manner as one who is hardy and robust, and one who is much exposed to the open air.

The temper and mind ought to be carefully attended to in diseases. Fear, anxiety, and a fretful temper both occasion and aggravate diseases. In vain do we apply medicines to the body to remove maladies which proceed from the mind. When that is affected, the best medicine is to soothe the passions, to divert the mind from anxious thought, and to keep the patient as easy and cheerful as possible.

Attention ought likewise to be paid to the climate, or place where the patient lives, the air he breathes, and his diet. Such as live in low marshy situations are subject to many diseases which are unknown to the inhabitants of high countries. Those who breathe the impure air of cities have many maladies to which those who reside in the country are entire strangers. Persons who feed grossly, and indulge in strong liquors, are liable to diseases which do not affect the temperate and abstemious.

It has already been observed, that different occupations and situations in life dispose men to peculiar diseases. It is therefore necessary to inquire into the patient's occupation and manner of life. This will not only assist us in finding out the disease, but will likewise direct us in the treatment of it. It would be very imprudent to treat the laborious and the sedentary precisely in the same manner, even supposing them to labor under the same disease.

It will likewise be proper to inquire, whether the disease be constitutional or accidental; whether it has been of long or short duration; whether it proceeds from any great or sudden alteration in the diet or manner of life. The state of the patient's body, and of the other evacuations, ought also to be inquired into; and likewise whether he can with ease perform all the vital and animal functions, as breathing, digestion, &c.

Lastly, it will be proper to inquire to what diseases the patient has formerly been liable, what medicines were most beneficial to him, and if he has a strong aversion to any particular drug.

As many of the indications of cure may be answered by diet alone, it is always the first thing to be attended to in the treatment of diseases. Those who know no better, imagine that every thing which goes by the name of a medicine possesses some wonderful

power or secret charm, and think, if the patient swallows enough of drugs, that he must do well. This mistake has many ill consequences; it makes people trust to drugs, and neglect their own endeavors; besides, it discourages all attempts to relieve the sick where medicines cannot be obtained.

Medicines are useful in their places; and when administered with prudence may do much good; but when they are put in place of every thing else, or administered at random, which is not seldom the case, they must do mischief. We would, therefore, wish to call the attention of mankind from the pursuit of secret medicines to such things as they are acquainted with. The proper regulation of these may often do much good, and there is little danger of their ever doing hurt.

Every disease weakens the digestive powers. The diet ought, therefore, in all diseases, to be light and of easy digestion. It would be as prudent for a person with a broken leg to attempt to walk, as for one in a fever to eat the same kind of food, and in the same quantity, as when he was in perfect health. Even abstinence alone will often cure a fever, especially when it has been occasioned by excess in eating or drinking.

Nor is a proper attention to diet of less importance in chronic than in acute diseases. Persons afflicted with low spirits, wind, weak nerves, and other hypochondriacal affections, generally find more benefit from the use of solid food, and generous liquors, than from all the cordial and carminative medicines which can be administered to them.

Nor is the attention to other things of less importance than diet. The strange infatuation which has long induced people to shut up the sick from all communication with the external air, has done great mischief. Not only in fevers, but in many other diseases, the patient will receive great benefit from having the fresh air prudently admitted into his chamber.

Exercise may likewise in many cases be considered as a medicine: sailing, or riding on horseback, for example, will be of as much service in the cure of consumptions, glandular obstructions, &c. as any medicines yet known. In diseases which proceed from a relaxed state of the solids, the cold bath, and other parts of the gymnastic regimen, will be found equally beneficial.

Few things are of greater importance in the cure of diseases than cleanliness. Many diseases may be cured by cleanliness alone; most of them may be mitigated by it, and in all of them it is highly necessary both for the patient and those who attend him.

Many other observations, were it necessary, might be adduced to prove the importance of a proper regimen in diseases. Regimen will often cure diseases without medicine, but medicine will seldom succeed where a proper regimen is neglected. For this reason, in the treatment of diseases, we have always given the first place to regimen. Those who are ignorant of medicine may confine themselves to it only. For others who have more knowledge, we have recommended some of the most simple and approved forms of medicine in every disease. These, however, are never to be administered but by people of better understanding; nor even by them without the greatest precaution.

GENERAL OBSERVATIONS ON FEVER.

FEVERS, though the most common complaints, are those in which mankind, whether professional or laical, are most apt to be misled. It has been well observed, that "in reality, no writer seems to have been fully satisfied with his own definition, and it is not extraordinary, therefore, that he should have seldom given satisfaction to others." This difficulty proceeds from the complexity of the symptoms that enter into the character of a fever; the contrariety of many of them to each other in different stages of it; and the occasional absence of some, that, in other instances, appear to constitute its leading features. There are also two other difficulties of no inconsiderable magnitude, which the nosologist has to contend with in laying down a clear and perspicuous survey of fevers; namely, their division or collocation, and their generic names.

The remote cause of fever can frequently be traced; but we are too little acquainted with the nature of several of them to be able to restrict them to a specific mode of action.

The usual division of fevers is into intermittents, and continued, on account of their taking up different times in their natural duration; some being compounded of a number of paroxysms, following each other in a regular succession, at some distance of time, as happens in intermittents or agues; in others, a fresh paroxysm comes on, immediately as the crisis of the former, so as hardly to leave the patient wholly free from fever, as occurs in remittents; and in others, there is such a quick succession of paroxysms, that

the one comes on before there is any visible abatement of the febrile symptoms, as in continued fevers.

Causes of Fever.—As more than one-half of mankind is said to perish by fevers, it is of importance to be acquainted with their causes. The most general causes of fevers are,—infection, errors in diet, unwholesome air, violent emotions of the mind, excess or suppression of usual evacuations, external or internal injuries, and extreme degrees of heat or cold. As most of these have already been treated of at considerable length, and their effects shown, we shall not now resume the consideration of them, but shall only recommend it to all, as they would wish to avoid fevers and other fatal diseases, to pay the most punctual attention to these articles.

Fevers are not only the most frequent of all diseases, but they are likewise the most complex. The distinguishing symptoms of fever are,—increased heat, frequency of pulse, loss of appetite, general debility, pain in the head, and a difficulty in performing some of the vital or animal functions. The other symptoms usually attendant on fevers, are nausea, thirst, anxiety, delirium, weariness, wasting of the flesh, want of sleep, or the sleep disturbed and not refreshing.

When the fever comes on gradually, the patient generally complains first of languor or listlessness, soreness of the flesh or the bones, heaviness of the head, loss of appetite, sickness, with clamminess of the mouth; after some time come on excessive heat, violent thirst, restlessness, &c.

When the fever attacks suddenly, it always begins with an uneasy sensation of excessive cold, accompanied with debility and loss of appetite; frequently the cold is attended with shivering, oppression about the heart, and sickness at stomach, or vomiting.

Fever considered as an effort of Nature.—Our bodies are so framed as to have a constant tendency to expel or throw off whatever is injurious to health. This is generally done by urine, sweat, stool, expectoration, vomit, or some other evacuation.*

* It was the opinion of Hippocrates, that fever is an effort of nature to expel something noxious to the body either ingenerated, or introduced from without. Beholding a violent commotion in the system, followed by an evacuation from the skin and kidneys, with which the paroxysm terminated, he ascribed the commotion to a fermentation, concoction, or ebullition, by which the noxious matter was separated from the sound humors; and the evacuation to a despumation or scum, which such separation produces, or rather to the discharge of this morbid scum from the emunctories that open externally. Galen supported this

There is reason to believe, if the efforts of Nature, at the beginning of a fever, were duly attended to and promoted, it would seldom continue long; but when her attempts are either neglected or counteracted, it is no wonder if the disease prove fatal. There are daily instances of persons, who, after catching cold, have all the symptoms of a beginning fever; but by keeping warm, drinking diluting liquors, bathing their feet in warm water, &c. the symptoms in a few hours disappear, and the danger is prevented.

[The duty of the physician, in a case of fever, is thus truly and forcibly laid down by Professor CHARLES CALDWELL, in his "Analysis of Fever." "If the primary affection be slight, the symptoms which follow be moderate, and the constitution of the patient sound and vigorous, nature herself, if not interrupted, will complete the cure, with but little or no assistance from art. This she will do by a restoration of the broken balance of action and circulation. In this case, it is the chief duty of the physician to be a mere looker-on, attentively observant of the process before him, and careful that nothing in the course of it go wrong.

"But if the complaint be severe, and the issue doubtful, the practitioner must interfere, with the resources of his art.

"In doing this, he must still be a faithful follower of nature. Like her, he must aim at the production of centrifugal action, that a general equilibrium may be restored, and the paroxysm resolved in a secreting stage. To aid with all his skill in the production of that stage must be his object; and to that issue must all his exertions be directed.

"In his efforts to effect this, his course is plain. Nature herself has drawn the outline of it, and set him the example how to follow.

"He must not permit the action of the system to be either too high or too low, but must so regulate it as to bring it directly to the secreting point. This being done, his next duty is to administer secretory remedies, if the process does not spontaneously occur.

hypothesis with all the learning of his day, and it is the only explanation of fever to be met with in his medical writings, through the long course of three thousand years; in fact till the time of Sydenham, who still adhered to it, and whose pages are full of the language to which it gave birth; and it was blended almost insensibly with the dialect of the chymists of the day. In itself, this doctrine, considered hypothetically, is not only innocent, but highly ingenious and plausible. It is in unison with several phenomena of pyretic or febrile diseases; and derives a strong collateral support from the general history of eruptive fever, in which we actually see a peccant matter, producing general commotion, multiplying itself in a ferment, and at length separated and thrown off at the surface by a direct depuration of the system.

“The means to be employed by him, in regulating the action of the system, are plain and simple. He must, according to circumstances, evacuate, cool, and reduce, or stimulate, raise, and give warmth, or employ, at the same time, both modes of practice skilfully united. Let him use every expedient that experience and invention can suggest, judgment approve, and art apply, to resolve spasm, produce general centrifugal action, and induce secretion, and his duty is performed. If, under these circumstances, the disease proves fatal, it is on account of its being, from some consideration, beyond the control of the present state of medical science.

“The fever being subdued by the entire removal of irritation and internal congestion, convalescence will, in general, be most successfully conducted without the exhibition of tonic remedies. A scheme of diet, drink, and general regimen, skilfully directed, and faithfully observed, constitutes now the means in which confidence may be most safely reposed. The patient is feeble and emaciated, but not *diseased*. Let the points specified, then, receive the attention to which they are entitled, and the powers of the constitution will accomplish the rest, by bestowing contemporaneously substance and strength.”]

Our design is not to institute a critical inquiry into the nature and immediate causes of fever, but to mark its most obvious symptoms, and to point out the proper treatment of the patient with respect to his diet, drink, air, &c. in the different stages of the disease.

Almost every person in a fever complains of great thirst, and calls for drink, especially of a cooling nature. This at once points out the use of water, and other cooling liquors. What is so likely to abate the heat, promote perspiration, increase the quantity of urine, and, in short, produce every salutary effect in an ardent or inflammatory fever, as drinking plentifully of water, thin gruel, or any other weak liquor, of which water is the basis? The necessity of diluting liquors is pointed out by the dry tongue, the parched skin, and the burning heat, as well as the unquenchable thirst of the patient.

In inflammatory fevers, where the thirst is great, the following forms a grateful and cooling beverage :

Take cream of tartar, half an ounce.
White sugar, four ounces.
Fresh confection of orange, three ounces.
Hot water, three pints.

Half a pint or more may be drank as occasion requires. [Or,

Carbonate of ammonia, one drachm.
 Rain or river water, three ounces.
 Strong vinegar, enough to neutralize the ammonia.
 Mix, and as soon as effervescence ceases, add
 Sweet spirits of nitre, two drachms.
 Antimonial wine, one drachm.
 Syrup of lemon, one ounce.

After the ingredients are well mixed, a table-spoonful may be taken every hour, until the fever abates.]

Many other cooling liquors, which are extremely grateful to patients in a fever, may be prepared from fruits, as decoctions of tamarinds, apple tea, orange whey, and the like. Mucilaginous liquors might also be prepared from marshmallow roots, linseed, lime-tree buds, and other mild vegetables. These liquors, especially when acidulated, are highly agreeable to the patient, and should never be denied him.

Symptoms of Fever.—At the beginning of a fever, the patient generally complains of great lassitude or weariness, and has no inclination to move. Lying in bed abates the violence of the circulation, and gives nature an opportunity of exerting all her force to overcome the disease. Confinement to bed alone would often remove a fever at the beginning; but when the patient struggles with the disease, instead of driving it off, he only fixes it the deeper, and renders it more dangerous. This observation is too often verified in travellers, who happen when on a journey to be seized with fever. Their anxiety to get home, induces them to travel with the fever upon them; which conduct seldom fails to render it fatal.

In fevers, the mind as well as the body should be kept easy. Company is seldom agreeable to the sick. Indeed every thing that disturbs the imagination increases the disease: for which reason every person in a fever ought to be kept perfectly quiet, and neither allowed to see nor hear any thing that may in the least affect or discompose the mind.

Though the patient in a fever has the greatest inclination for drink, yet he seldom has any appetite for solid food: hence the impropriety of urging him to eat, is evident. Much solid food in a fever is every way hurtful. It oppresses nature, and, instead of nourishing the patient, serves only to increase the disease. What food the patient takes, should be in small quantity, light, and of easy digestion. It ought to be chiefly of the vegetable kind, as panada, roasted apples, gruels, and such like.

Nothing is more desired by a patient in a fever, than fresh air.

It not only removes his anxiety, but cools the blood, revives the spirits, and proves every way beneficial. Many patients are in a manner stifled to death in fevers for want of fresh air; yet such is the unaccountable infatuation of most people, that the moment they think a person in a fever, they imagine he should be kept in a close chamber, into which not one particle of fresh air must be admitted. Instead of this, there ought to be a constant stream of fresh air into a sick person's chamber, so as to keep it moderately cool. Indeed, its degree of warmth ought never to be greater than is agreeable to one in perfect health.

Nothing spoils the air of a sick person's chamber, or hurts the patient more, than a number of people breathing in it. Air that has been breathed repeatedly will greatly increase the disease. Such air not only loses its spring, and becomes unfit for the purpose of respiration, but acquires a noxious quality, which renders it in a manner poisonous to the sick.

In fevers, when the patient's spirits are low and depressed, every method should be taken to cheer and comfort his mind.

It is a common notion, that sweating is always necessary in the beginning of a fever. When the fever proceeds from obstructed perspiration, this notion is not ill-founded. If the patient only lie in bed, bathe his feet and legs in warm water, and drink plentifully of warm water-gruel, or any other weak, diluting liquor, he will seldom fail to perspire freely. The warmth of the bed, and the diluting drink, will open the pores, and promote the perspiration, by means of which the fever may often be carried off. But instead of this, the common practice is to heap clothes upon the patient, and to give him things of a hot nature, as spirits, spiceries, &c. which increase the disease, and render it more dangerous.

When a patient is recovering from a fever, great care is necessary to prevent relapse. Many persons, by too soon imagining themselves well, have lost their lives, or contracted other diseases of an obstinate nature. As the body after a fever is weak and delicate, it is necessary to guard against catching cold. Moderate exercise in the open air will be of use, but great fatigue is by all means to be avoided. Agreeable company will also have a good effect. The diet must be light, but nourishing. It is dangerous, at such a time, to eat as much as the stomach may crave.

INTERMITTENT FEVERS, OR AGUES.

1. Intermitting fevers afford the best opportunity both of observing the nature of a fever, and also the effects of medicine. No person can be at a loss to distinguish an intermittent fever from any other, and the proper medicine for it is now almost universally known. The several kinds of fevers of this description take their names from the period in which the paroxysm returns, as quotidian, tertian, quartan, and quintan.

2. The generic character of an intermittent fever consists of periods or paroxysms, between each of which there is a perfect interval when no fever is present. They admit of several distinctions, as *true*, *spurious*, *perfect*, and *imperfect*. The true and perfect intermittents which occur are—1. the *Quotidian* or daily, having an intermission of twenty-four hours.—2. *Tertian*, or third day, forty-eight hours.—3. *Quartan*, or fourth day, seventy-two hours. When the return of an intermittent exceeds the latest of these times, and is irregular, it is termed erratic or wandering. The other distinctions are of no practical utility, the means of cure being the same.

3. It is generally acknowledged, that *marsh miasmata*, or the effluvia arising from stagnant water, or marshy ground, when acted upon by heat, are the most frequent cause of this fever. This is evident from their abounding in rainy seasons succeeded by heat, and being most frequent in countries where the soil is marshy, along the borders of water-courses, and in the neighborhood of ponds. Marsh effluvia, however, are not the sole cause of intermittents, since it is found that persons residing constantly in the most healthy part of cities, and far remote from marshes, are not unfrequently attacked by them. Debility, however induced, a poor watery diet, damp houses, exposure to evening dews, lying upon the damp ground, watching, fatigue, and depressing passions of the mind, are, all of them, frequent causes of the disease. When the inhabitants of a high country remove to a low one, they are generally seized with intermittent fevers, and to such persons the disease is most apt to prove fatal. In a word, whatever relaxes the body, diminishes the perspiration, or obstructs the circulation in the capillary or small vessels, disposes the body to agues.

4. The paroxysm of an intermittent consists of four successive stages, viz. its access, a cold, a hot, and a sweating stage.

5. **ACCESS.**—An intermittent is generally ushered in with pain in the head and loins, weariness of the limbs, stretching, yawning, with sometimes great sickness and vomiting. To these symptoms, after an interval of indefinite duration, succeeds.

6. **THE COLD STAGE.**—The extremities become cool; the skin pale and contracted; the pulse small, frequent and somewhat corded; the general sensibility is much diminished; tremors come on, and, finally, violent shaking; with suppression of all the secretions.

7. **THE HOT STAGE.**—After a longer or shorter continuance of shivering, the heat of the body gradually returns; irregularly at first, and by transient flushes, soon, however, succeeded by a steady, dry, and burning heat, considerably augmented above the natural standard. The skin, which before was pale and constricted, becomes now swollen, tense and red, and is remarkably sensible to the touch. The sensibility, diminished in the cold stage, is now preternaturally acute; pains attack the head, and flying pains are felt over various parts of the body. The pulse is quick, strong, and hard; the tongue white, the thirst great, and the urine is high colored.

8. **THE SWEATING STAGE.**—A moisture is at length observed to break out upon the face and neck, which soon becomes universal and uniform. The heat falls to its ordinary standard; the pulse diminishes in frequency, and becomes full and free; the urine deposits a sediment; the bowels are no longer confined; respiration is free and full; all the functions are restored to their natural order—when, after a specific interval, the paroxysm returns, and performs the same successional evolutions.

9. Intermittent fever in temperate latitudes, under proper regimen, will frequently go off without medicine: and when the disease is mild, in an open, dry country, there is seldom any danger in allowing it to take its course; but when the patient's strength seems to decline, or the paroxysms increase in violence, or the regular period for the paroxysm is anticipated, remediate measures ought to be immediately resorted to. It is always an unfavorable circumstance when the intervals between the paroxysms become shorter, as there is danger of the fever assuming the remittent or continued type; on the contrary, it is a favorable omen when the exacerbation is postponed or the intervals become longer. When the elements of the disease are regularly developed, that is, when the different stages follow each other with perfect regularity, a favorable issue may generally be confidently anticipated.

10. The general character of intermittents is subject to certain

modifications, which, as they have an important bearing in a practical point of view, are necessary to be understood. For all useful purposes, the following division is, perhaps, the best; viz. "1. The Inflammatory; 2. The Congestive; 3. The Gastric; and 4. The Malignant Intermittents."

11. In the inflammatory species, the intermission is generally very short. Notwithstanding there may be profuse perspiration in the last stage, the apyrexia does not become complete; the pulse remaining quick, tense, and accelerated; with a dry, warm skin, and considerable thirst; attended with slight head-ache, and transient pains in the extremities and back. The pulse is remarkably strong, hard and full in the hot stage, and the heat of the surface is so intense that the patient expresses himself as though he were burning. This species occurs most frequently in winter and spring.

12. Congestive intermittents are more frequently met with in the Mississippi Valley than in other parts of the United States. They rarely occur except in individuals of exhausted and debilitated habits. "They are characterized by a very protracted cold stage, deep-seated pain in the head, vertigo, fainting, a sense of weight or oppression in the breast, coma, a small weak pulse; the hot stage coming on very slowly, and developing itself very imperfectly—the skin is scarcely warm, the countenance pale and contracted, the breathing confined and anxious, and the pulse frequent, small, and tense, with an internal sensation of heat."

13. Gastric intermittents are characterized by great irritation of the stomach and bowels; a foul and bitter tongue; much nausea and vomiting of bilious matter; great pain in the forehead; purging of watery matter, occasionally mixed with bile; yellowness of the skin and eyes, and saffron colored urine. The patient has great thirst for sour drinks, and complains much of pain under the lower ribs of the right side.

14. Intermittents of the malignant grade are confined generally to hot climates. They are distinguished by copious, fetid perspiration in the third stage; hemorrhages from various parts of the body, with red blotches under the skin. It is frequently called *spotted intermittent*; runs its course with great rapidity, and is the most dangerous of all intermittents; in fatal cases the patient usually dying in the third paroxysm.

15. To these may be added many anomalous affections, which assume a strictly periodical character, although they do not perceptibly run through the regular stages of an intermittent fever. They are known as *masked* or *dumb agues*; and will generally

yield to the use of the same remedies which are found to arrest a regular intermittent. Acute pains in various parts of the body, rheumatism of the eye and of the hip, headache, toothache, dysentery, hiccough, cramp in the stomach, mania, and many other affections are often periodical in their appearance, and may be successfully treated in the same way.

16. TREATMENT.—The first thing to be done in every fever, is to remove the remote cause of the disease, if it can be ascertained; or, if it be of such a character as to forbid removal, to protect the patient from its influence as much as possible; for a disease cannot be cured if the cause giving rise to it continues to exercise its deleterious influence over the sick. If the fever be occasioned by fatigue, cold, depressing passions, or similar causes, the appropriate means of protection will suggest themselves to every mind. If from the effluvia generated in marshes or ponds, remove the patient from their influence by placing him in an upper apartment; for experience has abundantly shown, that the foul air generated in such situations never rises so high as the second stories of houses. If, however, it be not convenient to remove him from the lower floor, keeping the doors and windows closed on the side of the building exposed to low, damp grounds, will afford very adequate protection.

17. The treatment of this disease is naturally divided, first, into that proper during the intermission, and upon which the radical cure depends; and second, the means to be employed during the paroxysm, in endeavoring to shorten it, and induce the fourth or secreting stage. The principal object, therefore, is to equalize the circulation and consequently to restore the secretions; which is to be accomplished by putting a period to the stage which is present, and hastening that which naturally succeeds it. During the intermission our endeavors are to be directed towards breaking up the train of morbid action giving rise to the paroxysms, and keeping the secretory organs in healthy action.

18. In the forming stage, or access, *emetics* are often of signal benefit. If taken in such a manner as to vomit immediately, without producing much nausea, an emetic will, in a great majority of instances, put a speedy termination to its progress. The best remedies for this purpose are, full doses of ipecacuanha or sulphate of zinc (white vitriol). Of the former, from twenty to thirty grains may be given (according to the age of the patient), mixed in half a pint of warm water, of which he may drink one-fourth every five minutes until vomiting is induced. During its action, the

stomach should be kept distended with warm water or weak chamomile tea. From ten to twenty grains of the sulphate of zinc may be dissolved in half the quantity of water, and given in the same manner. Where these remedies are not convenient, a very strong solution of common salt in water, or of the flour of mustard, will answer the purpose very well. If the emetic does not act immediately, copious drafts of tepid water must be taken without delay, and the fauces be irritated with a feather. These means will rarely fail to produce the desired effect. Nausea or purging at this period, by weakening the action of the vascular system, would have a tendency to promote internal congestion, and add to the violence of the paroxysm.

19. Much benefit may be derived in some cases from the administration of stimulants in anticipation of the cold stage. For this purpose a powder composed of six grains of cayenne pepper and two scruples of powdered bayberries, given in pills or mucilage, has often had the happiest effect. Tincture of myrrh, ether, brandy, and the various preparations of ammonia, have all been used to fulfil this indication with advantage. Riding a hard trotting horse, walking briskly, or violent exercise of any kind, will, in a majority of instances, have the same effect. Where the system is not too much debilitated to forbid the attempt, the affusion of cold water, just before the beginning of the chill, will often induce reaction and ward off the paroxysm. Care and judgment, however, are requisite in the use of these remedies; for, if they fail in producing the desired result, they will seldom fail to do injury by increasing the paroxysm. Cold affusion in the stage of access, ought never to be attempted except the patient be of a full habit of body, and appears to possess sufficient vital energy to insure reaction.

20. COLD STAGE.—Various remedies have been exhibited for the purpose of curtailing the cold stage, and most of them with benefit in particular instances; but those only which may be used in the generality of cases, need be mentioned in a work of this character.

21. Emetics may be employed in most cases with advantage. Those already named as proper in the access, are to be preferred. Given just before, or immediately after, tremors commence, an emetic will rarely fail to bring on reaction, and put a speedy termination to the fit, by breaking up the chain of morbid action and equalizing the circulation. In debilitated and relaxed habits, where vomiting might be dangerous, full doses of opium (1 to 2 grains), administered just before the chills comes on, will prove decidedly beneficial. Opium, however, as well as other stimulants, are to be

avoided in persons of a plethoric and vigorous habit of body; as much benefit could not be expected from them, and they would do injury by increasing the violence of the reaction and of the determination to the brain in the hot stage. In such cases, also, much external warmth will render the hot stage more intense, without relieving in the slightest degree the chilliness experienced after the depression is fully set in. An opposite practice is necessary in weak and debilitated persons, where the powers of reaction are feeble, rendering the development of the succeeding stage tardy and incomplete. Here, both internal and external stimulation may be used to the extent necessary to prevent fatal prostration, and to lift the patient into the hot stage. These indications may be fulfilled by hot applications to the extremities and around the body, such as bags of hot corn or of salt; hot bricks enveloped in flannel; bladders of hot water applied to the pit of the stomach; friction with coarse woollens or the flesh brush; mustard draughts, or even blisters, applied to the ankles and wrists. Among the best internal stimulants are, sulphuric ether, which may be given in doses of a teaspoonful, mixed in cold water, every forty minutes; the carbonate of ammonia, in five grain doses, commencing just before the chill sets in, and repeated in half an hour if reaction has not come on; wine-whey; brandy toddy; and ginger tea.

22. Dr. Kellie, of the British navy, about forty years since, recommended for the purpose of arresting the cold stage of intermittents, the application of the tourniquet or bandages to an upper and a lower extremity. He asserts, that by obstructing the circulation in an arm and a leg, we may, in general, stop the cold stage in three minutes; and that if the compression be made immediately previous to the accession of the cold stage it will be entirely prevented. His plan is, to apply a tourniquet or a bandage to an arm and a thigh, sufficiently firm to arrest the circulation, and to allow them to remain on about fifteen minutes. In all cases where the tourniquet is used, he states, from ample experience, that the hot stage is rendered milder and shorter. The success of this method, however, in the hands of others, has not been so great as when employed by Dr. Kellie; yet, in obstinate cases, where there would be little danger of producing vascular turgescence of the brain, and inducing apoplexy, by shortening the round of circulation, it might be worthy a trial.

23. Dr. McIntosh has recently introduced the practice of blood-letting in the cold stage of intermittents, and, from his own state-

ments and those of many other physicians, on both sides of the Atlantic, with astonishing success. Dr. M. states, "that he has seen men in the most severe sufferings from the chills, relieved after the abstraction of six, eight, and ten ounces of blood; and he has known three ounces to suffice. The relief, which is the most perfect relief that can be conceived, is so sudden, when a good orifice is made, that it has delighted and surprised every one who has seen this practice." He had the practice tried on himself; and although the usual remedies had been tried without success, he found that before twelve ounces of blood were drawn, "the rigors ceased with all their unpleasant accompaniments," and neither the hot nor the sweating stage ensued. "A pleasant sense of heat succeeded the painful one of cold; and, instead of weakness, he was sensible of an acquisition of strength." Since then, he and many others have bled a great number of patients in the cold stage of this malady, and uniformly with the same favorable results. The blood should be drawn from a large orifice.

24. **HOT STAGE.**—All fevers in this country are more or less of an inflammatory character at the beginning; consequently, bloodletting is indicated in most cases, especially if they be recent, where medical assistance is required at all. After the accession of the hot stage, if the excitement runs high, blood should be immediately drawn from the arm, to the full extent of reducing the pulse. A sufficient bleeding will seldom fail to relieve entirely the pains in the head and back; calm tumultuous febrile action; reduce the system to the secreting point; and obviate the tendency to visceral inflammation and congestions. In the inflammatory variety of ague, the bleeding may be repeated as often as the pulse, by continuing strong, hard and full, in succeeding paroxysms, may indicate it. In many cases, after bloodletting has been carried to the extent named, gentle perspiration will come on, and gradually increase until a period is put to the hot stage. This course of things may be promoted by the administration of gentle diaphoretics, such as warm balm tea, a decoction of thoroughwort, or small doses of a very weak solution of tartar emetic or of ipecacuanha.

25. When, however, the excitement is not reduced to the sweating point by bloodletting, or in cases where venesection is not deemed prudent, the patient should be allowed copious draughts of cold water, or of any cool, bland, acidulated drinks. Whatever prejudices may be entertained in regard to the use of cold water in fever, the most extensive experience testifies to its beneficial effects. Indeed, it is, when judiciously managed, often com-

petent to the subduction of the disease itself. Nothing is more grateful to the patient than cold water, nor does the *materia medica* possess a more effectual febrifuge. If the skin be hot and dry, sponging the head, face, arms, and breast, or, indeed, the whole body, with cold water, or a mixture of vinegar and water, for twenty or thirty minutes, will, in most cases, entirely subdue all febrile action, and bring on the secreting stage, with perfect relief from all unpleasant symptoms. It would be worse than useless to sponge the body for a few minutes only. The tendency to reaction must be entirely overcome, or the excitement will return with augmented violence as soon as the cold applications are discontinued. When the patient experiences chilly sensations from the use of cold water, it should be discontinued immediately.

26. Minute portions of ipecacuanha, or of tartar emetic, are also valuable remedies in this stage. If the stomach can bear it, one grain of ipecac. or the eighth of a grain of tartar, may be given once an hour until the sweating stage is fully ushered in. The first of these articles is preferable in cases attended with a disposition to watery purgation—but where the bowels are sluggish, and free from inflammatory symptoms, with little or no disposition to act under the stimulus of ordinary purgatives, tartar will more effectually fulfil the indication. A good method of exhibiting the tartar is, in combination with nitre. A mixture of two drachms of antimonial wine to six of the sweet spirits of nitre, may be given in doses of a teaspoonful every hour. The “Spirit of Mindererus” (acetated solution of ammonia) has many advantages over its kindred medicines, as a diaphoretic, being more prompt, complete and certain in its operation, and more grateful to the stomach; and will be retained when all others are rejected. The dose is a tablespoonful every hour while the hot fit lasts.

27. Opium, exhibited half an hour after the commencement of the stage of excitement, has been highly recommended by Dr. Lind and other physicians of eminence. It is stated, that thirty or forty drops of laudanum given at that time, will effectually calm the anxiety and headache, shorten the stage, and render the paroxysm more regular. It may be beneficially employed in lax constitutions, but cannot be recommended in other cases. In fact it is always better to depend on other means, and not resort to it, except under the advice of a physician, or when every thing else has failed.

28. As soon as the sweating stage begins, cold drinks must be withheld, and tepid ones substituted. One of the best that can be

used, at this period, is, a tea made of the leaves and flowers of the *eupatorium perfoliatum* (thoroughwort, boneset.) A teacupful of it may be taken every half hour until the intermission is complete. Barley water, mint and balm teas, and similar articles, may also be given with advantage throughout this stage.

29. In cases attended with obstinate vomiting in either the cold or hot stage, a solution of camphor in sulphuric ether (two scruples of the former to one ounce of the latter) may be exhibited in doses of twenty or thirty drops, with ten grains of magnesia, every half hour. One or two doses will generally give entire relief. Lime water, in doses of a tablespoonful every twenty minutes, is also an admirable remedy in such cases. When the vomiting occurs in the cold fit, much benefit may be derived from the application of a mustard poultice over the pit of the stomach. The poultice should be mixed with simple water, without the addition of vinegar.

30. Where there is much acidity of the stomach present, a solution of the carbonate of potash, (two drachms to a pint of water) in doses of a tablespoonful every thirty minutes, will generally afford relief, and also facilitate the action of purgatives. The ley of wood ashes may be advantageously employed in the same circumstances.

31. It should be borne in mind, that whatever advantage may have been gained by the administration of remedies during the paroxysm, it is upon the course pursued in the intermission that the radical cure of the disease depends.

32. Few cases of fever occur without exhibiting unequivocal manifestations of biliary derangement. It is less frequently met with in mild intermittents, perhaps, than in fevers of any other grade; yet, most cases of this description absolutely require the use of such remedies as are calculated to evacuate the liver and its associate organs, and almost every case would be benefitted by them. The use of emetics has already been referred to. Cathartics are to be principally relied on for the purpose under consideration, and merit the most serious consideration; for the injudicious use of them has often, instead of benefitting the patient, increased the malady, and changed it from a simple intermittent into a remittent or continued fever.

33. In the use of purgatives, particular attention must be paid, 1st. to the condition of the alimentary canal, as, whether it be irritable and easily excited to action, or torpid and difficult to arouse—2d. to the period at which they are administered—3d. to the time

usually required for the article exhibited to act—and, 4th. to the kind of evacuations ordinarily produced by the medicine.

34. Such cathartics only should be selected as produce, either alone, or in combination with others, consistent bilious evacuations; and it may be laid down as a rule, admitting of no exception, that they should be administered in the intermission, in such a manner as to act during the stage of excitement. The proper time for giving a purgative is about two or three hours before the chill is expected to come on. By this course two very important advantages are gained:—the stimulating effects of the medicine will be spent at a time when most serviceable in assisting to ward off the chill; and its cathartic operation secured during the hot stage, when the system is better able to bear evacuations, which, at that period, will aid greatly in diminishing the excitement, relieving congestion, and shortening the paroxysm. Some of the most able practitioners in miasmatic districts, have abandoned the use of tonics entirely, and rely alone on stimulating purgatives for stopping the chill, and with great success. With this intention, in ordinary cases, a combination of fifteen grains of calomel, ten of aloes and ten of rhubarb, may be given either in powder or pills. If, however, great irritability of the stomach exists, twenty grains of calomel may be given alone, and recourse be had to the remedies already referred to for relieving the stomach. The calomel itself will assist much in quieting gastric derangement.

35. When there is much torpor of the bowels, more active cathartics may be exhibited in combination with calomel—as jalap, scammony, colocynth, or gamboge. The extract of white walnut is also an excellent purgative, and to be preferred before the others named, in cases where the stomach is not affected. If, from any cause, calomel cannot be prudently administered, pills composed of equal parts of aloes, rhubarb, and the sulphate of iron, or the walnut extract, are the best substitutes.

36. When there is much difficulty in procuring evacuations, the action of medicine may be promoted by nauseants, bleeding when the pulse will bear it, and stimulating injections. Castor oil, senna tea, or a solution of the carbonate of potash, may also be advantageously used in such circumstances. When watery passages occur, if the medicine previously given be calculated to produce them, its further use should be abandoned, and recourse be had to others less likely to have that effect, keeping in view the indication to be fulfilled.

37. A great variety of tonics have been recommended in this

disease; but, by general consent, Peruvian bark and its preparations stand at the head of the list. The bark in substance is now seldom given in this country, the sulphate of quinine being preferred, both on account of the size of the dose and the greater likelihood of its being retained by the stomach. Much controversy has arisen among physicians respecting the proper period for the exhibition of quinine. The course, however, most usually pursued in the United States, and certainly with as much success as any other, is to commence about six hours before the chill is expected to come on, with one or two grain doses, and continue them every hour until the period for its appearance has elapsed two or three hours. If the paroxysm does not occur, the quinine may be continued in the same doses night and morning, for several days, taking care to keep the bowels open with some of the purgatives already named. "The most convenient and elegant formula for exhibiting the quinine, is perhaps, the following:

Take Sulphate of quinine, sixteen grains.
Elixir vitriol, sixteen drops.
Lemon syrup, one ounce.

Mix.—Dose—a tea-spoonful every hour for an adult."

39. "As this mixture, though a very neat and concentrated one, is sometimes objected to on account of its bitterness, especially by children, I have generally prescribed it according to the following formula, by which almost all the bitterness is wholly removed:

Take Sulphate of quinine, six grains,
Elixir vitriol, ten drops.
Extract of liquorice, 1 1-2 drachms.
Water, two ounces.

Mix.—Dose—a tea-spoonful for a child between two and five years of age."

40. In obstinate cases the quinine may be united with an equal part of the carbonate of ammonia, or of piperine, and administered in the same doses. I have seen cases yield to this combination, which had resisted the quinine alone, although faithfully persevered in for a considerable length of time. Small doses of magnesia combined with the quinine is said, by a late writer, to add greatly to its efficacy. If the quinine should have a tendency to purge, about the time for the accession of the chill, it may be combined with small doses of Dover's powder, or opium.

41. When there is activity of the pulse, with pain in the region of the liver and spleen, and other febrile symptoms, the bark, in every shape, is inadmissible. Emetics, if they can be borne, with

purging and blistering, will generally remove at the same time both the fever and the visceral obstructions.

42. The United States are affluent in articles suited to the treatment of this disease. Of these the *aristolochia serpentaria* (black-snake root), has the highest reputation. Dr. Chapman says, "that combined with bark it adds to its efficiency; and in many cases this combination will cure when bark alone cannot effect that purpose. The efficacy of the following combination, when all others have failed, is well ascertained:

Take	Peruvian bark, half an ounce.
	Black-snake root, in powder, one drachm.
	Carbonate of potash, thirty grains.

Mix, and divide it into four equal powders, and take one every four hours."

43. *Eupatorium perfoliatum* (boneset) has been already referred to. It possesses extraordinary powers; and may be so managed as to produce emetic, diaphoretic, and tonic effects. It may be used in every stage of intermittents, and is particularly serviceable when the intermission is not complete. For its tonic effects it must be given during the intermission in the form of a strong decoction, after it is cold, or in powder. Dose of the powder, twenty grains; of the decoction, a wineglassful every hour or oftener.

44. The barks of the wild cherry-tree, the black alder, the different species of oak, the American poplar, and the dogwood tree, have all been used with advantage where the Peruvian bark was indicated. Of these the *dogwood* merits most attention. It is considered by many as not at all inferior to the bark. It may be given in doses of one or two drachms of the powdered bark every two hours, beginning at the period recommended for the exhibition of the quinine. A salt has recently been prepared from it, the nitrate of cornine, from one to two grains of which is a dose, and is preferable to the powder.

45. The *tela araneorum* (spider-web) has been used by Drs. Jackson and Chapman, in doses of four grains, made into a pill with gum arabic, and administered every two hours during the intermission. That used is collected in cellars, and is the product of the black spider. It is spoken of in the highest terms. Dr. Eberle says, "It certainly possesses very considerable powers in allaying morbid irritability, and in calming the excitement both of body and mind. In my own person, it produces the most delight-

ful state of mental and corporeal tranquillity, far exceeding that which is caused by opium."

46. Among the mineral remedies, *arsenic* and the *sulphate of zinc* are the most valuable. Arsenic is considered by many as a specific in the worst cases of this disease. It forms the basis of most of the nostrums sold under the name of "ague drops." *Fowler's solution* is the best form in which it can be given. It may be administered with perfect safety to persons of every age, commencing with from four to six drops for an adult, and gradually increasing it to ten drops three times a day. It is best to take it immediately after meals. Its use is contra-indicated in persons of a very thin, weak habit of body.

47. The *sulphate of zinc* is a valuable remedy for the cure of agues, and has often succeeded where the quinine has failed. It may be prepared in the following manner:

Take	Sulphate of zinc, ten grains.
	Red pepper, in powder, two scruples.
	Conserve of roses, a sufficient quantity.

Mix—and divide the mass into forty pills; one to be taken every two hours during the intermission.

48. As autumnal and winter intermittents generally prove more obstinate than those which attack the patient in spring and summer, it will be necessary to continue the use of medicine longer in the former than in the latter. A person who is seized with intermitting fever in the beginning of winter, ought frequently to take such medicine as will keep the liver and bowels in action, although the disease may seem to be cured. Nothing is more certain to bring on a relapse than costiveness.

49. When agues are not properly cured, they often degenerate into obstinate chronic diseases, as dropsy, jaundice, and indurations of the liver and spleen. For this reason, all possible care should be taken to have them radically cured before the constitution has been too much weakened.

50. Though nothing is more rational than the method of treating intermitting fevers, yet, by some strange infatuation, more charms and whimsical remedies are daily used for removing this than any other disease. There is scarcely an old woman who is not in possession of a nostrum for stopping an ague; and it is singular to see with what readiness their pretensions are believed. Those in distress eagerly grasp at any thing that promises sudden relief; and a single case of the disappearance of the disease, under

the occult influence of charms and amulets, will more than counterbalance a thousand failures, in the estimation of the superstitious. The only method, however, to obtain a safe and lasting cure, is to assist nature in removing the malady by the use of medicine.

REMITTENT FEVER.—BILIOUS FEVER.

51. This fever takes its name from a remission of the symptoms, which happens sometimes sooner and sometimes later, but generally before the eighth day, but without any distinct intermission. There is no essential difference between remittents and the common autumnal intermittents; as they arise from the same causes (3.) often run into each other, and are cured by the same remedies. They differ only in grade of violence and duration of the paroxysms. But, as they require a distinct method of treatment, they ought not to be confounded.

52. SYMPTOMS.—As in intermittent fever, the disease is usually ushered in with yawning, stretching, a sensation of cold, nausea, or bilious vomiting. To these succeed thirst; pain of the head, back, and stomach; restlessness; difficulty of breathing, or oppression of the chest; extreme heat over the whole body; and not unfrequently partial delirium. The pulse is seldom full, but frequent and hard; the tongue is white and moist: with a yellowness very perceptible in the whites of the eyes, and occasionally over the whole body.

53. The symptoms, after a time, abate considerably, and a gentle moisture is diffused over the body; but there is no complete interval or freedom from fever: and perhaps in a few hours it returns with the same violence as before, or under an aggravated form. After the continuance of a certain number of hours, varying in different subjects, this second fit wastes its force, and again remits; to which a third accession of the usual symptoms succeeds; and in this manner the disease proceeds, with fresh paroxysms and remissions, until the fever ceases wholly, or is changed into the intermittent or continued form.

54. Occasionally, slight chills are among the first symptoms of indisposition. At first they alternate with flushes of heat, which latter gradually increase in duration until they predominate wholly, and the febrile reaction is fully developed.

55. If the disease gains strength, or is very violent, the remission is scarcely obvious, and is immediately followed by another paroxysm, wherein all the symptoms are much aggravated; the tongue becomes dry and stiff; the mouth, teeth, and inside of the lips, are incrustated with a dark brown or black fur; the stools pass off involuntarily and are highly offensive; the pulse becomes quick, small, and irregular; the urine is retained or passed with difficulty; and picking at the bedclothes, with startings of the tendons, and great incoherency ensue, which usually closes the scene.*

56. It is impossible to describe all the symptoms of this disease, as they vary according to the season of the year, the situation, and the constitution of the patient. They may likewise be greatly changed by the initial treatment, and by many other circumstances too numerous to mention. Sometimes the inflammatory symptoms predominate, sometimes the nervous, and sometimes the malignant or congestive. Nor is it at all uncommon to find them appear in rapid succession; or even a complication of them at the same time, in the same individual. But, whatever may be the grade of the disease, the liver and its associate organs are those most prominently affected.

57. **DIET.**—The regimen must be adapted to the prevailing symptoms. When there are any signs of inflammation, the diet must be of the most slender and unirritating kind, and the drinks weak and diluting. Great caution must be exercised in regard to articles of a stimulating or heating character, as this fever is frequently changed into a continued one by improper diet and medicines.

58. Whatever the symptoms may be, the patient ought to be kept cool, quiet, and clean. His apartment, if possible, should be large, and frequently ventilated by letting in fresh air at the doors and windows. It may likewise be occasionally sprinkled with vinegar or lemon juice. His linen and bedclothes should be frequently changed, and all his evacuations immediately removed. Though these things have been mentioned before, it is thought necessary to repeat them here, as they are of more importance to the sick than practitioners are apt to imagine. Dr. Lind says, "I can affirm, that a physician who puts these in practice will much oftener succeed than one who is even more skilful, but has not opportunity of using these means."

59. **TREATMENT.**—The indications to be fulfilled in the treat-

ment of this disease, are—to subdue the febrile reaction—to relieve the stomach and bowels of vitiated secretions or other irritating matters—and to restore the broken balance of excitement, and consequently the secretory organs to healthy action. All treatment at the beginning, must have for its object the bringing on of a regular, perfect intermission. After that is effected, the disease is to be treated in every respect as an intermittent.

60. At the commencement of the disease, bloodletting alone will often procure a complete intermission; or, when not competent to produce that effect, will moderate the excitement, relieve the inflammatory symptoms, and give indispensable aid to other remedies.

61. After blood has been drawn to the extent of moderating the febrile reaction, an emetic may be exhibited. In ordinary cases, emetic tartar is to be preferred, as being more likely to assist in establishing the secretions;—but where there is much nausea, vomiting, without the rejection of much fluids of any kind, with considerable thirst, and occasional watery stools, with loathing of food, evidencing great irritation of the mucous lining of the stomach and bowels, the tartar is inadmissible; and recourse must be had to ipecacuanha.

62. Venesection and emetics may be repeated at suitable intervals; but no general rule can be laid down in regard to these points, as each particular case is liable to many sudden and important variations. The symptoms present must always govern their exhibition. However, a full, tense pulse, with a flushed countenance, great heat of the surface, or violent pain in the head, will always demand the employment of the lancet.

63. Purgatives are necessary throughout the whole course of the disease. Mercurial purges are best; and are the only kind that can be relied on with safety. Full doses of calomel and jalap (from ten to twenty grains of each,) or of calomel united with some other purgative (34. 35.) should be exhibited as early in the disease as practicable. If it does not act in a reasonable length of time, proportioned to its activity, it may be repeated, or assisted by some more active medicines, or by injections. When the patient is distressed and prostrated by painful, watery stools, small doses of Dover's powder may be united with the calomel. This is preferable to opium, on account of its being less liable to affect the head, and possessing at the same time considerable diaphoretic powers.

64. After having procured evacuations of the proper kind (34.),

they are to be kept up by the use of cathartics at suitable intervals, until they lose their dark, offensive character, and assume a more natural, healthy appearance. The fear of inducing debility by the continued exhibition of purgatives, which leads many persons to abandon them, to the irreparable injury of the patient, need not be entertained; for, instead of being weakened, the patient will always be conscious of an accession of strength after every passage of consistent, bilious matter—the only kind of purging to be solicited.

65. During the continuance of this treatment, several subordinate symptoms will claim attention. And first, of heat of the surface. Nothing is so effectual in relieving this as the affusion of cold water. It affords the most delightful sensations to the patient; produces a tendency to sleep; renders the pulse fuller, softer, and more uniform; the skin moist; and will often produce a distinct remission. When the excitement is great, the mouth and throat dry, and the thirst is urgent, cold water alone or saturated with cream of tartar when the bowels are not irritable, may be freely allowed. Instead of postponing, it will aid the action of medicine (25.) In cases of deep congestion, when the surface is rather cool and the sense of internal heat great, the southern physicians are in the habit of prescribing copious clysters of cold water, and even ice-water when it can be obtained, with the most prompt and signal relief.

66. If there be a strong determination to the head, the hair must be well removed. Nothing in many cases affords more relief than this simple expedient. But, if it does not succeed, have recourse to cold applications, as wet cloths or pounded ice; to which may be added, topical depletion by means of cups or leeches. Bathing the feet and legs in warm water, will often have a good effect in such cases. Some physicians, instead of cold applications to the head prefer tepid ones, considering them less dangerous, and of superior efficacy in every respect.

67. Much difficulty frequently arises from nausea and vomiting, giving great distress to the patient, and causing the rejection of medicine. This may be caused either by a redundant secretion of bile, or by irritability of the stomach. In the first event, the evacuating remedies already named (61. 63.) will give relief. Morbid irritability of the stomach may be quieted by occasional doses of the effervescing draught (*see Dispensatory,*) or, what is better, by lime-water or equal parts of lime-water and sweet milk united, of which a table-spoonful may be taken every twenty minutes.

A teaspoonful of the decoction of serpentaria is highly recommended by Dr. Kuhn in such cases. If none of these succeed, resort to bleeding if the pulse will bear it, sinapisms to the extremities, fomentations of brandy and cloves to the stomach, and, lastly, to blisters. I have found, when all other means had failed, a large dose of calomel quiet gastric irritation like a charm. It should be given mixed with water only. Advantage has also been derived, in such circumstances, from a table-spoonful of mulled wine taken every fifteen or twenty minutes. A very effectual method, in refractory cases, is to draw a blister, from an inch and a half to two inches in diameter, over the pit of the stomach, and, after the cuticle is removed, sprinkle from a fourth to half a grain of morphine on the abraded surface.

68. Under the treatment detailed, an intermission usually occurs in two or three days. If, however, it is not brought about in that length of time, recurrence may be had to emetics; and, if circumstances justify it, endeavor to make a strong impression on the system by the application of blisters to the extremities.

69. To moderate the general febrile excitement, recourse may be had to the usual antiphlogistic diaphoretics, such as the acetated solution of ammonia; the saline mixture; sponging the body with cold water (25); and the plentiful use of cool, acid drinks, such as tamarind-water, lemonade, apple-water, or currant jelly dissolved in water. When there is pain in the abdomen, with tenderness on pressure, minute portions of ipecacuanha and camphor (half a grain of the former to one grain of the latter), will generally act on the skin and give relief. If the febrile reaction is not very violent, with much restlessness, anxiety, and a hot skin, and no determination to the brain, the following mixture may be advantageously exhibited:

Take	Acetated liquor of ammonia, seven ounces.
	Sweet spirits of nitre, one ounce.
	Laudanum, thirty drops.

Mix.—Dose—a table-spoonful every two hours.

70. When, from any cause, the lining membrane of the stomach and bowels “is brought into a high state of irritation, the disease loses its remittent form, and often assumes a low, typhoid character, with almost constant delirium, a tender, swollen state of the abdomen, a dry, dark brown, or black crust on the tongue, with clean, red edges; watery and reddish stools; great prostration; and a very dry, hot skin. Cases of this kind frequently run on for several weeks; and convalescence is always very gradual and

tedious." In such cases the abstraction of blood from the abdomen by cups or leeches will afford much benefit. Fomentations to the abdomen with flannel wrung out of hot water will aid materially in reducing the intestinal affection; or, a large emollient poultice may be applied. Small doses of calomel and opium or Dover's powder, are peculiarly serviceable in such cases. One grain of calomel and one-fourth of a grain of opium may be given every hour or two. Thin gruel and gum water may be occasionally taken, but no other food.

71. The use of balsam copaiva is very highly recommended by Dr. Eberle in such cases. He says, "I have so often seen the most decided benefit derived from this article, in protracted cases, attended with great irritation, or sub-acute inflammation of the bowels, that I should consider myself as neglecting an important curative means, were I to omit prescribing it in diseases of this character. It may be given thus:

Take	Balsam copaiva, half an ounce.
	White sugar, half an ounce.
	Powdered gum arabic, two drachms.
	Mix in a mortar, and then add
	Water, two ounces.

Mix.—Take a spoonful every two hours."

72. Various opinions have been expressed with regard to the propriety of exhibiting tonics during the remissions of this disease. Some of the most eminent physicians in this country, as well as in Europe and the West India islands, whose opportunities for experience have been ample, strenuously advise the "vigorous exhibition of bark as soon as a considerable remission occurs in the disease." Others again, with quite as much reputation and experience to support them in their views, "condemn this practice in terms of unqualified reprobation." In the more violent remittents of this country, however, experience has, in the last few years, taught physicians, in the face of all theory, that the quinine, administered in large doses, and on the occurrence of the slightest remissions, is one of the most potent remedial agents that can be arrayed against the disease.

73. The following extract of a letter addressed by Dr. Thomas Fearn, of Alabama, to a friend in that state, and published in the "Transylvania Journal of Medicine," will convey a general idea of the method of exhibiting it, and its effects on the system.

74. "In administering quinine in remittent fever, our practice has usually been to give three doses of twenty grains each, with

an interval of an hour between; and this had never before been exceeded by me." In the case he is speaking of, he says, "I waited through the night for the expected remission; and when I believed there was as near an approach to apyrexia as would occur, although the pulse still remained about one hundred in a minute, and the skin above the natural temperature, I gave him, at one dose, three tea-spoonfuls of the medicine. At the end of one hour there was a diminution in the frequency of the pulse—the invariable effect of *large* doses of quinine when its operation is favorable. Another dose of similar size was now administered, and a still further reduction of the pulse was observed, at the end of the next hour, accompanied by a 'ringing in the ears.' The same dose was again repeated; making ninety-six grains in two hours."

He states the effects of large doses to be "almost invariably to reduce the frequency of the pulse, sometimes from one hundred to sixty, and even to fifty in the minute; to produce perspiration, ringing in the ears, partial deafness, and in two or three instances blindness, or obscurity or confusion of vision. These effects have never been known by us to be permanent, or to continue longer than a few days." "My opinion is, that it acts more as a narcotic than a sedative. In small doses it is most usually stimulant: but in large doses the stimulant effects are not obvious, if indeed they produce a sedative operation."

75. The following remarks are extracted from an article in a recent number of the same journal, in which a number of cases, successfully treated by large doses of quinine, are detailed.

"If, before the stage of excitement is off, the quinine be administered in large doses, it will, in nineteen cases out of twenty, prevent collapse.—And further, when the stage of excitement has passed off, and the patient is under the influence of quinine, the rhubarb and aloes will exert a greater influence over the biliary secretions than will calomel under other circumstances.

"Our remittents are frequently complicated with other diseases, which seem to preclude the use of quinine—but when these affections are evidently regulated by the remittent, aggravated in the exacerbation of fever, and moderated in the remission, they may be set down as symptomatic, and so treated."

The quinine "should not be given in the cold stage, which we term the stage of oppression. Neither would I give it within two hours (would prefer four) next preceding that stage. In the reaction, when the fever is yet rising, it should still be withheld; but

when an approach to apyrexia is distinctly ascertained, the safety of the patient demands its exhibition.

The quantity should be regulated by the strength, or vital energy of the patient. If there be much prostration and torpor of the general system, mammoth doses. Smaller portions will do where the system can bring its own energies in aid of the remedy "

CONTINUED FEVERS.

SIMPLE CONTINUED FEVER.

76. This fever has generally been considered as a compound of the inflammatory and the milder species of typhus; symptoms of the former being apt to preponderate at its commencement and middle stage; but towards its termination those of a typhoid character, especially when the disease is of long continuance.

77. Although fevers of this type are called *continued*, and do continue for several days with nearly the same degree of violence, yet they have evident exacerbations and slight remissions daily, not so distinct, however, as to allow them to be classed with remittents.

78. Every thing having a tendency to enervate the system, may be set down as a remote cause of fever; and, accordingly, we find it resulting from great bodily fatigue, indulgence in sensual gratifications, violent exertions, intemperate eating and drinking, excessive evacuations, the suppression of long accustomed discharges, together with all the causes already enumerated when speaking of fevers in general.

79. It is the opinion of most physicians, that there is something in the nature of all acute diseases which usually determines them to be of a certain duration; consequently, these terminations, when salutary, happen at certain periods of the disease rather than at others, unless disturbed in their progress by improper treatment, or by the occurrence of accidental causes. These periods, from the time of Hippocrates to the present day, have been very generally admitted, under the name of *critical days*. The days on which it is supposed the termination of continued fevers generally occurs, are the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, and twentieth. Although these periods are less distinctly marked in our diseases than we should be led to in

fer from the writings of the ancients, owing probably to the variability of our climate interfering with the regular progress of the disease; yet every practitioner of enlarged experience, who has correctly watched the march of a continued fever, has had frequent occasion to remark that there is more or less disposition in it to give way on certain days. As these indications of nature seem to exist, advantage should be taken of them, so as to lend the aid of medicine to effect the end she seems to have in view at each particular period.

80. SYMPTOMS.—An attack of simple continued fever is generally ushered in with a considerable degree of languor, or sense of debility; sluggishness; aversion to motion; frequent yawning and stretching; the face and extremities become pale, and the skin over the whole body constricted; followed by a sensation of cold in the back, passing thence over the whole frame; and these continuing to increase, tremors in the limbs and cold shiverings succeed. With these symptoms there is loss of appetite, unpleasant taste in the mouth, slight pain in the back, head and loins, and a small, frequent respiration. The sense of cold and its effects, after a little time become less violent, and alternate with flushes of heat; and, at length, going off altogether, are succeeded by great heat, diffused over the whole body; the face is flushed, the skin is dry, as also the tongue, and universal redness prevails, with violent pain in the head, oppression at the chest, sickness at the stomach and an inclination to vomit up its contents; great thirst; costiveness; and a full, frequent pulse, beating from 100 to 120 strokes in a minute. In this, as in other fevers of the continued kind, there is generally an increase of the febrile symptoms towards evening, and if there be much determination of blood to the head, incoherency or slight delirium will ensue.

81. After continuing, probably, for several days, with no great variation, these symptoms are gradually changed; the tongue, from being at first whitish, becomes streaked with yellow or brown fur, the pulse loses its strength, yet retains its hardness, and becomes quicker, the strength is considerably depressed, and the disease assumes a mild typhoid character.

82. If the disease be likely to prove fatal, either in consequence of its long continuance, or the severity of the symptoms, picking at the bed-clothes, startings of the tendons, involuntary discharges of urine and fæces, coldness of the extremities, and hiccough, come on, with a sinking or intermitting pulse. The favorable symptoms are, the pulse becoming soft, moderate, and approaching

its natural state; the tongue losing its furred appearance and becoming clean; thirst abating; the skin covered with a gentle and equable moisture, and feeling soft to the touch: the secretory organs performing their several functions, and the urine depositing flaky crystals of a dirty red color, and becoming turbid on being allowed to stand.

83. TREATMENT.—The treatment of simple continued fever consists, in 1st. reducing the general force of the circulation; 2d. restoring the healthy actions of the various excretory organs, particularly the skin, liver, and kidneys; 3d. equalizing the circulation and obviating local determinations; and 4th. in the removal of every thing calculated to irritate the system or cause undue excitement.

84. The means for effecting these objects have already been treated of in part, in speaking of remittent fever, and will be more fully detailed under the head of "inflammatory continued fever." They are but varieties of the same disease, and are so often complicated, and require so precisely the same treatment, that it would be useless to repeat the means to be employed under two distinct heads. The necessary variations in the exhibition of remedies, will always be dictated by the symptoms, and will be pointed out in the detail of treatment proper for the inflammatory grade.

INFLAMMATORY CONTINUED FEVERS.—SYNOCHA.

85. This fever is characterized by the usual initial symptoms of fever, followed by considerable increase of heat, a frequent strong and hard pulse, scanty and high colored urine; with great suffusion of the countenance, eyes, and skin; there is great thirst, and the tongue is covered with a white fur; the bowels costive; and disturbed rest. The animal functions are not much disturbed until late in the disease, when there come on a morbid sensibility and intolerance of usual impressions, the judgment is much impaired, with great restlessness and hurried or impeded respiration.

86. CAUSES.—Sudden transitions from heat to cold; exposure to a high temperature; violent exercise; drinking strong liquors; a full diet, with little exercise; the sudden application of cold to the body when warm; violent passions; sleeping on the damp ground; drinking cold liquids when the body is heated; repelled eruptions; suppressed evacuations; night-watchings; and every thing calculated to induce plethora.

87. Delirium, excessive restlessness, great oppression of the breast, with laborious respiration, startings of the tendons, hic-cough, cold clammy sweats, and involuntary discharges of urine and fæces, are extremely unfavorable symptoms.

This disease usually goes through its course in about fourteen days, and terminates critically, either by gentle perspiration, diarrhœa, hemorrhage from the nose, or the deposite of a copious sediment in the urine, a crisis which is usually preceded by some variation in the pulse. It often, however, terminates fatally. As it is a disease always attended with danger, the best medical assistance ought to be procured as soon as possible. A physician may be of use at the beginning, but his skill is often of no avail afterwards.

88. REGIMEN.—The patient may use such drinks as rennet-whey, barley-water, balm-tea, apple-tea, or tamarind water. Orange whey is likewise a very grateful and refreshing beverage—it is made by boiling in milk and water a bitter orange sliced, until the curd separates. If no orange can be had, a lemon, a little cream of tartar, or a few spoonfuls of vinegar will answer very well. These drinks may be used at discretion. A variety has been mentioned, in order that the patient may have it in his power to choose those which are most agreeable, and that when tired of one, he may have recourse to another. In regard to the use of cold water, see the remarks on that subject when speaking of intermittent fever, paragraph 25.

89. The diet must be very spare and light. All kinds of meat, and even chicken-broths, are to be avoided. Corn or oat-meal gruel, panado, or stale light bread boiled in water, to which a little sugar and salt may be added to render it more palatable, will form the best diet.

90. It will greatly relieve the patient, especially in the hot season, to have fresh air frequently let into the chamber; and to have his linen and bed-clothes changed as often as prudence and circumstances will permit. It is very common in fevers, to load the patient with bedclothes, under the pretence of making him sweat, or of defending him from cold. This custom has many ill consequences. It increases the heat of the body, fatigues the patient, and retards, instead of promoting, perspiration.

91. Sprinkling the chamber with vinegar, lemon juice, or vinegar and rose-water with a little nitre dissolved in it, will greatly refresh the sick; and should be frequently repeated, especially in very warm weather. The patient's mouth should be often washed

with a mixture of water and honey, to which a little vinegar may be added, or with a decoction of figs in barley water. His feet and hands ought likewise to be frequently bathed in lukewarm water, particularly if the head be affected. He should be kept as quiet and easy as possible. Company, noise, and every thing that disturbs the mind, is hurtful. Too much light, or any thing that affects the senses, ought to be avoided. His attendants should be as few as possible, and they ought not to be too often changed; and his inclinations ought rather to be soothed than contradicted.

92. TREATMENT.—In this, as well as all other fevers attended with a hard, full, quick pulse, bleeding is of the utmost importance. This operation ought to be performed as soon after the symptoms of inflammatory fever make their appearance as possible. One large bleeding, at this period of the disease, will have a much better effect than repeated small ones afterwards. The quantity of blood to be taken away from a large orifice, however proportion to the strength of the patient and the violence of the disease. The object is, to subdue the disease; and the benefit to be derived, is not from the quantity of blood taken, but from the impression made by it; and that alone must govern us in regard to the amount to be abstracted at any one time. The pulse is the only sure indication of the degree of impression made. Frequent bleedings are of less value than one efficient one, in any case demanding the use of the lancet. They tend to weaken and prostrate the vital forces, without making much impression on the disease; or, if that does not take place to an alarming extent, the system becomes so habituated and educated to the loss of blood, that no effect whatever is produced—at least no beneficial one.

93. If, after the first bleeding, the fever should increase, and the pulse become more frequent and hard, there will be necessity for repeating it a second, and perhaps a third, and even a fourth time, as the symptoms may require. If the pulse continue soft, and the febrile excitement moderate after the first bloodletting, it ought not to be repeated. One bleeding in the mild form of continued fever is often sufficient; the abstraction of blood not being so imperiously demanded as in the inflammatory species; yet it must not be neglected, both on account of the great tendency to local inflammations which always exists in continued fever, and of the efficacy of the lancet in relieving visceral congestion.

94. As before remarked, the pulse must be the principal guide in venesection; but we must also take into consideration the age, sex, mode of life, habits, and constitutional predisposition of the

patient. Persons in warm climates, or those who are of a weak, nervous habit of body, will not bear it so well as the inhabitants of more northern regions, or those who are athletic, and of a sanguine temperament. The buffy coat which appears on the blood in inflammatory complaints, is generally made a guide for its further abstraction; but this test cannot be relied on with safety; for it often appears when there is no inflammation present, as in dysmenorrhœa, and rheumatism. The size of the orifice will also have much influence in producing the buffy appearance. More buff will appear on blood drawn from a small orifice in an affection not inflammatory, than on an equal quantity drawn from a large one in a disease of a highly inflammatory character. "A hard, quick, tense and corded pulse, will always justify the use of the lancet, whatever the disease may be called, or at whatever stage it may occur."

95. After venesection, an emetic should be exhibited, if circumstances will justify it, particularly if nausea prevail at the commencement of the disease. Twenty grains of ipecacuanha and two of emetic tartar may be given. Twenty years ago, emetics were always employed in the beginning of this disease; and although they afterwards fell into disuse and purging was relied on, principally because it is less offensive, the most judicious and successful practitioners have, of late years, again resorted to them, and bear the most unequivocal testimony in favor of their great usefulness and superiority. They rarely fail to quiet headache, relieve gastric uneasiness, and bring the disease to a speedy solution. Emetics, however, are inadmissible in cases of florid countenance, where there is a predisposition to apoplexy, in pregnancy, or in rupture.

96. Purgatives are necessary throughout the whole course of the disease; both for the removal of irritating matters from the intestines, and for exciting the biliary organs to secretion. The kinds of purgatives best suited to effect these objects, have been already pointed out under the head of intermittents (see paragraphs 33, 34). A combination of purgatives is best, as it increases their activity and mitigates their violence; and "Cooke's pills," "Lec's antibilious pills," and "Anderson's pills," may be recommended as among the best combinations. The discharges are often quite black and tar-like; and this appearance may be always hailed as a favorable omen, provided care be taken to keep them up until the liver is completely emulged of vitiated bile, and the bowels cleared of it. This black matter is much disposed to adhere to

the inner coat of the intestines, and its removal is productive of singular advantage and relief to the patient. Calomel, in doses proportioned to the emergency of the case, and the pills named above, are the best remedies to effect this purpose. These remedies must be continued until the object is attained—after that, some of the milder laxatives may be substituted in their stead. Where there is much inflammation of the alimentary canal, small doses of calomel and ipecacuanha are to be preferred. (See *Dysentery*.) Purgatives should not be used during the exacerbation, as they always act more promptly and efficaciously during the remission—nor should they be discontinued until convalescence is complete, for constipation of the bowels would almost certainly bring on a relapse.

97. If the heat and fever be very great, forty or fifty drops of the dulcified spirit of nitre may be made into a draught, with an ounce of rose water, two ounces of common water, and half an ounce of simple syrup or of loaf sugar. This draught may be given to the patient every three or four hours while the fever is violent; afterwards, once in five or six hours will be sufficient, using in the mean time some diluent drink.

98. If there be great heat of the body, with pain in the head, and delirium, and the general abstraction of blood, by opening a vein in the arm, is not deemed advisable, the temporal artery may be opened, and the blood allowed to flow until the head is relieved. Cups may also be applied to the temples, and cold applications to the head. When other means will not answer, the head may be shaved, and a blister applied to the back of the neck.

99. If about the tenth, eleventh, or twelfth day, the pulse becomes softer, the tongue more moist, and the urine begins to let fall a reddish sediment, there is reason to expect a favorable issue to the disease. But if, instead of these symptoms, the patient's spirits grow languid, his pulse sinks, and his breathing becomes difficult, with stupor, tremulousness, and startings of the tendons, there is reason to fear that the consequences may be fatal. In this case mustard cataplasms may be applied to the soles of the feet, the ankles, and wrists. They are best made by mixing the mustard with starch and water, without vinegar. The patient must be supported by small quantities of wine-whey, negus, sago-gruel with wine in it, and similar articles. Hoffman's anodyne tincture, tincture of hops, and the camphorated emulsion may be also advantageously given. I have seen the best effects result from the exhibition of ammonia in such cases, in doses of from two to five

grains every two hours. The following is also an excellent remedy:

Take Camphor mixture, six ounces.
 Sulphuric ether, three drachms.
 Aromatic spirits of ammonia, three drachms.

Mix—and give the patient a tablespoonful every half hour or hour.

100. Diaphoretics require to be used, in continued fevers, with a clear and discriminating judgment. They are often mischievous; and, consequently, are more seldom used than formerly. They are never of service until all inflammatory symptoms are subdued, and evacuations are established. It may be stated as a general fact, well worthy of remembrance, that to *force a sweat* is almost always hurtful, and never beneficial to the patient. Where this class of remedies is indicated, nitre and antimony, or the spirit of Mindererus, may be exhibited as directed in remitting fever (69). A solution of emetic tartar in water, given in such doses as will not disturb the stomach, is an admirable remedy. It interrupts the chain of morbid association on which the fever depends, and speedily brings it to a crisis. The following mixture may often be exhibited with advantage:

Take Strong vinegar, seven ounces.
 Carbonate of potash, one drachm.
 Loaf sugar, two drachms.
 Water, six ounces.

Mix—and give a tablespoonful every hour.

This will reduce the fever, and quiet the stomach when irritable. Its diaphoretic properties may be increased by the addition of sweet spirits of nitre or antimonial wine.

The use of refrigerants, as they are termed, is occasionally beneficial. Nitre is the article most usually employed; and may be given according to the following formula:

Take Nitre, one drachm.
 Tartar emetic, one grain.
 Calomel, twelve grains.

Mix—divide it into eight powders, and give one every two or three hours.

These powders rarely produce diaphoresis, but are very effectual in reducing arterial action; and, from their tendency to purge, are peculiarly valuable in cases where constipation and a hot surface are united. Cold water applied to the surface is also a very certain and effectual means of allaying febrile excitement. It may be applied by dashing it on the body or by sponging—the last

method is preferable, as being the most agreeable and the safest, and quite as efficient. Its use is called for by an active pulse and high temperature of the skin. Where the pulse is full and the skin not hot, it is a perilous remedy. In cases complicated with local inflammation, also, cold ablutions will rarely do good, and sometimes manifest harm. Cold water, or cool acidulated drinks, should be freely taken so long as the skin remains dry. When the surface is moist with perspiration the drinks should be tepid.

101. It requires little argument to prove, that the body, as well as the mind, must require indulgence after the severity of such a disease. Those who follow laborious employments ought not to return too soon to their business after a fever, but should remain as quiet and free from exertion as possible, until their strength is recruited; nor should those engaged in mental pursuits attempt to pursue study, or engage in any avocation that requires intense thinking.

102. The most rigid attention to regimen is not only necessary during the fever, but also during convalescence. By neglecting this, many relapses occur, or the patients fall into other diseases, and continue valetudinary for life. It is a common remark among the observant, that infinitely more persons die from errors in diet, and other imprudencies, after convalescence is begun, than from disease itself. The appetite is usually voracious upon recovering from most fevers, and to say that its cravings are not to be satisfied, is certainly an unpalatable doctrine; yet the safety of the patient lies in its strict administration.

103. Fresh air, exercise of a gentle kind, on horseback or in a carriage, and agreeable society, will greatly contribute to the recovery of convalescents.

104. "Tonics and stimulants are very rarely necessary during convalescence from inflammatory or common continued fever. They would indeed very generally prove prejudicial. For several days after the complete subsidence of the fever, the patient ought to refrain from solid animal food, and above all from high-seasoned articles of diet. Farinaceous liquids, and weak animal broths, taken in moderation, will in general be quite sufficient for the first four or five days of convalescence."

105. It may also be well to remark, that in this, as in most other fevers, sleep is much interrupted, and from a want of it delirium often ensues. For this opium is often exhibited; but is a very uncertain and dangerous remedy in such cases, for should it fail to procure rest, the delirium would be much increased by it.

TYPHUS FEVER.—NERVOUS FEVER.

106. The name of this fever is derived from a Greek word signifying *stupor*, or heaviness, an affection which is very commonly associated with this form of disease. By nosological writers, the typhus fever has been divided into *typhus mitior* and *typhus gravior*, or into what was formerly called nervous fever, and putrid or malignant typhus. But as one of these is only an aggravated form of the other, without any difference, except as regards the degree of violence, there can be no good reason for retaining the distinction. It may also be added, that typhus fever, whether it be idiopathic, or the consequence of some other disease, is always of the same nature, presents the same symptoms, demands a treatment conducted on similar principles, and is cured by the same remedies. The only material difference between the two forms mentioned by nosologists, is, that the *mitior*, or mild typhus, generally comes on with more mildness in all its symptoms, and is more protracted in its continuance; several weeks sometimes elapsing before the occurrence of a crisis.

107. This fever has also been described by different authors under the names of *slow fever*, *jail fever*, *hospital fever*, *ship fever*, *petechial* or *spotted fever*, and *putrid* or *malignant fever*. But, by whatever appellation it is called, it is always the same disease, only modified by the situation in which it occurs and the constitutions of the individuals attacked by it.

108. SYMPTOMS.—Preceding an attack of this form of disease, an unusual degree of listlessness, languor, and sighing, is present for several days, without any other symptom denoting its approach; there being neither chill, nor fever, nor pain, nor uneasiness, in any part of the body. The patient complains of debility, with some loss of appetite, and dejection of spirits. As the case becomes more developed, a greater or less degree of derangement accrues in the circulatory system. Alternate sensations of heat and cold come on, with nausea, and occasional vomiting. These are followed by slight confusion of the intellect, a sense of debility, and tremor of the hands. At this stage the pulse is irregular, sometimes a little more frequent, and at others about the natural standard. But the malignant typhus is much more violent in its onset, and rapid in its progress. As in the milder type, the patient is first seized with great prostration of the body, in which the mind fully participates. Even in its early stages, there is some tender-

ness and soreness of the muscles, with acute pain in the head, back, and extremities, and an alternation of chills and flushes. These symptoms are speedily followed by well defined fever; by intense heat on the surface, and no inconsiderable determination to the head, as is manifested by the violent pulsation of the carotid and temporal arteries, by the suffused countenance, the wild, inflamed eye, and the tendency to delirium which constantly prevails. At this period the tongue is found to be dry, hard, chapped, and incrustated with a brown matter; the gums are affected in nearly the same manner, and the teeth are soon covered with the same dark fur. In the commencement, the pulse is generally quick, corded, and tense, but soon becomes slow, small and unequal. Respiration is laborious, and frequently interrupted by deep sighing; and the breath is singularly hot and offensive. The bowels are constipated; much heat, pain and oppression are felt at the pit of the stomach, combined now and then with vomiting of bilious matter; and constant, unquenchable thirst.

109. As the disease progresses, these symptoms are aggravated, and others still more violent are superadded. The debility is much increased; the pains become very distressing and acute; the fever increases; the pulse is small, tremulous, and so quick that it can scarcely be counted; the temperature of the surface is unequal, the skin being sometimes hot and dry, and at others cold and damp. The nervous tremors, that from the beginning, form one of the prominent symptoms, are so much aggravated as to amount to subsultus tendinum. It is not unusual at this stage, for the bowels to give way, and copious discharges of dark-colored fæces to take place; most generally, however, there are hemorrhages of dissolved blood, from the nose, gums, and mouth, associated with petechia, or with lived spots in different parts of the body. The pulse now sinks, the extremities become cold, blindness ensues; there is an involuntary flow of tears; difficulty in swallowing: palsy of the tongue; continued low muttering delirium; distortion of the muscles of the face; continued motion of the hands, and picking at the bedclothes; bloody stools; aphtha in the mouth; collapse; and death closes the scene. This is the ordinary progress of a case of extreme violence. But where circumstances are more favorable, an abatement of the febrile excitement takes place; the skin is bedewed with a gentle sweat; the tongue becomes moist and clean; the pulse slower and stronger; the temperature equable; delirium subsides; glandular swellings appear, and scabby eruptions break out about the mouth and nose.

110. CAUSES.—Much controversy has existed at different periods in regard to the origin of typhus fever. Many writers contend, that it is caused exclusively by a specific contagion; while an equal number, of not less authority, affirm that it is not, under any circumstances, a contagious disease, but arises from the same causes as other fevers, and only assumes the typhoid character in consequence of adventitious circumstances. Be that as it may, the great majority of authorities agree, that it is produced by profuse evacuations, poor diet, a close and humid state of the atmosphere, inattention to cleanliness; accumulated human exhalations; and a pent up, close atmosphere, deteriorated from want of free ventilation. Hence, it is most prevalent in the houses of the poor, in jails, camps, hospitals, and prison ships, when such places are much crowded, and due attention is not paid to ventilation. It is also generated by the effluvia arising from dead animal and vegetable matter in a state of decomposition.

111. TREATMENT.—Whatever may be their difference as to theoretical views, practitioners generally concur in the propriety of commencing the treatment with emetics, when called early in the disease. At a later period they are inadmissible, in a general point of view, yet cases do occur in which they may be used with advantage in the advanced stages—as where the stomach is foul, with great distress in that organ, a heavy loaded tongue, and much internal heat, and freedom from symptoms of an inflammatory character. Twenty grains of ipecacuanha and two of emetic tartar make a suitable emetic in such cases; but if watery purging be present, thirty grains of ipecac. alone will be better.

112. After the stomach becomes quiet, a purgative should be administered, of the kind named in the treatment of intermittent fever (34, 35.); and catharsis is to be kept up at regular and suitable intervals throughout the whole course of the disease. The following extracts from Hamilton's work "On Purgatives," are sufficiently explicit in regard to the propriety and method of exhibiting them in this disease.

113. "The complete and regular evacuation of the bowels in the course of the fever, is the object to be attained. Within this limit I have had much satisfaction in prosecuting the practice; nor have I, in a single instance, had occasion to regret any injury proceeding from it." "In most instances of fever, this practice of purgatives, is conducted with ease, and a tolerable degree of certainty. The observation and experience of individuals may be necessary, on some occasions, for directing measures where it is not

easy to lay down precise rules. The effect of purgative medicines may not be foreseen in every instance, or be altogether immediately under command; at any rate, however, the subsequent doses of purgatives, and the frequency of their repetition, will be regulated by the effect of preceding ones.

114. It is of importance to consult, in all respects, the ease and comfort of patients in fever. The exhibition of purgatives, therefore, should be so timed, that their effects may be expected during the day, when proper assistance can be best procured for the sick.

115. The purgative medicines which I have chiefly used in fever are—calomel, calomel and jalap, compound powder of jalap, aloes, solutions of any of the mild neutral salts, infusions of senna, and sometimes of the two last conjoined. My experience, in the treatment of typhus, enables me to draw the following conclusions:

1st. Purgative medicines are given with safety in typhus, to evacuate the contents of the bowels.

2d. Under this limitation, they may and ought to be exhibited at any period from the commencement to the termination of the fever.

3d. The early exhibition of purgatives relieves the first symptoms, prevents the accession of more formidable ones, and thus cuts short the disease.

4th. In the advanced period of typhus gravior, symptoms that indicated the greatest danger were relieved by the evacuation of the bowels, and the patients, in this instance, recovered.

5th. Reconvalence from typhus is greatly promoted and confirmed by the preservation of a regular state of the body. The same means secure against the danger of a relapse."

116. The following remarks on purgatives, and the adjuvant treatment necessary during the progress of the disease, are extracted from Eberle's "Practice of Medicine," vol. 1.

117. "Even in the stage of collapse, purgation sometimes becomes essential to the successful issue of the case. In this as in other low forms of fever, the brain and the whole system is sometimes greatly oppressed by intestinal irritation from acrid and offensive recrementitious matters poured into the alimentary canal, and this is particularly apt to occur in the advanced periods of the disease. In such instances, the prostration is very great, the face flushed, the pulse frequent and irregular, or slow and feeble; the eyes fixed and red, with coma, delirium, or a kind of stunned torpor of the intellectual and sensorial functions. In cases of this kind, a spontaneous discharge from the bowels, of a dark, or black, or highly offensive matter, or the free operation of a purge, will fre-

quently, almost immediately, improve the whole aspect of the disease.—(Armstrong.) I have, in several instances, seen patients almost entirely insensible, and in a state of extreme prostration in the latter stage of typhus, speedily restored to consciousness, and a general improved state of feeling and strength, by the copious discharge of dark, offensive matter from the bowels, in consequence of the exhibition of a purge.

118. Perhaps the most important remedy in the early period of typhus, with the view of arresting its progress, or moderating its violence, is *mercury*. In the simple variety of the disease, I have known its course effectively interrupted by a gentle mercurial treatment, during the forming and early period of the stage of excitement. If the system can be brought under the mercurial influence *during this period*, it will often put a speedy stop to its progress. The plan recommended by Drs. Tully and Minor, for the exhibition of mercurials in this disease, deserves, I think, the preference. It consists in the administration of small doses of calomel, from one to two grains every three or four hours, until slight manifestations of its specific influence occur in the mouth of the patient. If this quantity acts too powerfully on the bowels, a few grains of *Dover's* powders should be added, so as to restrain, but not wholly suppress its effects in this respect. Dr. Rush states, that he has known the pulse to become full, and an evident amendment to ensue on the supervention of a gentle salivation.

119. With regard to the employment of venesection in typhus, much difference of opinion exists among physicians. In the simple form of the disease, it will seldom be necessary to employ the lancet; but in cases where the arterial reaction is strong in the onset of this stage, the cautious abstraction of blood will often be useful. As a general rule, blood-letting must be regarded as unnecessary, and often injurious in the *simple* variety of the disease; but cases, even of simple typhus, do occur, in which this evacuation may be very beneficially practised. The judicious practitioner can seldom fail to perceive when blood-letting is likely to do good. Where the pulse is active, quick, and strong, or full and considerably resisting, as is sometimes the case, blood ought, unquestionably, to be drawn. We must nevertheless not forget, in the use of this remedy, that typhus is a disease attended with a radical tendency to prostration; a consideration which will be a sufficient caution to the judicious practitioner to proceed with much circumspection in the use of the lancet, even in cases which most clearly indicate the propriety of that measure.

120. Another very important remedy in the stage of excitement of typhus is the affusion of *cold water*. When employed whilst the skin is *hot* and *dry*, and the arterial excitement considerable, cold affusions often procure great relief, and sometimes give a speedy tendency to convalescence. A feeling of chilliness, or a temperature of the skin below the natural standard, or a moist skin, decidedly contra-indicate the use of this remedy (25). Under opposite circumstances, however, that is, when the skin is dry, and elevated in temperature, no remediate measure is more grateful to the feelings of the patient, or more apt to mitigate his sufferings. When the heat of the surface is unequally distributed, *partial* ablutions of the hands or feet will sometimes have a favorable effect. The existence of visceral inflammation forms an objection to the use of this remedy. After the heat of the skin has been reduced by the affusion of cold water, the patient should be dried and laid between two blankets, and warm diaphoretic ptisans administered—such as catnep, balm or sage tea. When the brain is much affected, we should place the feet in warm water, while the cold water is upon the head and over the body. (Armstrong.)

121. When the stage of collapse has supervened, the plan of treatment must be exciting and roborant. In the employment of stimulants, however, much caution and circumspection must be used, lest latent inflammations be roused by over stimulation. In some instances, the tendency to visceral inflammation is kept down by the antiphlogistic measures used in the preceding stage; but no sooner are stimulants given on the occurrence of collapse, than violent delirium ensues, the eyes becoming red and filmy; the face flushed, in short, unequivocal symptoms of cerebral inflammation coming on—(Armstrong.) Should the delirium, therefore, become more violent, the skin dry and very hot, and the pulse more frequent and corded, on the exhibition of stimulants, we must either omit their further use, or employ only the milder articles of this kind. *Wine* is an excellent stimulant in the collapse of fevers. The white wines are the best, and of these Madeira is perhaps the preferable one. The *carbonate of ammonia* also, is much employed in this country in the low states of fever. From its diaphoretic tendency, it may in general be administered much earlier on the supervention of collapse than wine, for instead of increasing the heat and dryness of the skin, an effect not unfrequently the consequence of the administration of wine, it generally causes a softness of the surface, and a freer and less irritated

action of the heart and arteries. It must be given in solution, mixed with a large portion of mucilage. Thus :

Take Carbonate of ammonia, two drachms.
 Powdered gum Arabic, three ounces.
 Loaf sugar, half an ounce.
 Water, eight ounces.
 Laudanum, forty drops.

Mix. Dose—a tablespoonful every hour or two.

122. *Camphor* has been long celebrated as a stimulant in cases of low fever with much functional disorder of the brain. Thirty or forty drops of a solution of two drachms of camphor to an ounce of ether, may be given every hour or two. Perhaps, the best way of administering this article is in the form of a mixture—Thus :

Take Powdered camphor, two drachms.
 Powdered gum Arabic, three drachms.
 Water, eight ounces.
 Hoffman's anodyne liquor, two drachms.

Mix—and give a tablespoonful every two or three hours.

123. *Opium* was formerly a good deal employed in the advanced stage of this disease. When profuse and exhausting diarrhœa occurs, or dysenteric symptoms, opium with minute portions of calomel will often do much service. In such cases, I have used small doses of Dover's powders—three grains every two hours with decided benefit.

124. *Blisters* are variously estimated as remediate agents in typhus. Applied about the period when the stage of collapse is approaching, that is, about the seventh or eighth day of the fever, they sometimes exert a very beneficial influence on the disease. At an earlier period they are apt to increase the general irritation of the system; and at a more advanced stage, vesication tends to increase the exhaustion, and there is much danger from gangrene of the blistered surface. When applied at the proper time, blisters will often improve the state of the skin, and tend to remove irregular determinations of the blood. Applied to the back of the neck, they generally moderate the cerebral disturbance, more especially where meningeal inflammation is present. It is not necessary, nor in general, proper, to suffer the vesicatory to remain on the skin until vesication is produced. When the skin is red, which will generally occur in the course of five or six hours, the plaster should be removed, and an emollient poultice applied in its stead. This will rarely fail to raise a blister in a few hours.

125. In cases of inflammatory typhus, the antiphlogistic remedies must be promptly and efficiently urged. Bloodletting is here our

main stay; but in order that it may prove beneficial, it must be employed soon after the supervention of the inflammation. "If it be delayed to the second or third day of the inflammation, it can no longer be employed without risk of irreparable injury." As a general rule, bleeding is seldom proper *after the first twenty-four hours* from the commencement of the inflammation; for the stage of collapse is apt to supervene rapidly on the occurrence of inflammation in this disease. (Armstrong.) It is always best to take away as much blood at once as will make a decided impression on the system. Dr. Armstrong advises, that the blood should be suffered to flow until an approach of syncope is induced; and to effect this with as little expenditure of the blood as possible, the patient should be supported in an erect or sitting position, while the blood is flowing. It is not necessary, generally, to take away much blood in typhus to produce an adequate effect. Unless a decisive impression be made on the system, however, little or no benefit will result from this measure.

126. In the *congestive* modification of typhus, Dr. Armstrong recommends blood-letting as the most efficient means for relieving the heart and internal organs from the overwhelming load of blood, and re-exciting the oppressed action of the heart and arteries.

127. As the internal congestions, however, appear to be the *consequence* of a previous loss of energy in the vital powers, and especially of the extreme vessels, it would seem most efficient and prudent to endeavor to remove this condition by means calculated to impart warmth and vigor to the system, and to recall the circulation to the extreme vessels of the surface. The means best calculated to effect these salutary changes, are stimulating frictions and warm applications to the external surface. Bottles filled with hot water, applied to different parts of the body, and frictions with tincture of capsicum, or flannels wrung out of hot brandy, are among the most effectual means for exciting the action of the extreme vessels, and deriving the circulation from the internal organs.

128. In addition to the above means for overcoming oppression from internal congestions, blisters, large doses of calomel, and purgatives, are important remedies. The bowels should be freely evacuated as soon as the reaction of the heart and arteries is in some degree re-established. Calomel in large doses appears to be peculiarly adapted to cases of this kind. From ten to twenty grains must be given every three or four hours until the bowels

are moved, and its operation promoted by stimulating enemata. The congestive form of typhus often terminates fatally in a few days, and is always rapid in its course. Our remedies must therefore, be promptly and diligently applied in cases of this kind. After the reaction has been established, the same general plan of treatment applicable to simple typhus must be pursued.

129. With regard to the dietetic management of this disease, it is scarcely necessary to state that the simplest kinds of liquid nourishment are alone admissible. Of these, however, the patient may be allowed as much as he can be induced to take, more especially during the sinking stage of the complaint. By keeping the stomach and bowels moderately distended with bland liquids, considerable support is given to the sinking powers of the system, and good, moreover, probably arises from it by its tendency to allay intestinal irritation, and affording the absorbents a supply of mild and invigorating fluid for the support of the system.

130. During convalescence, tonics in moderate doses, such as the infusions of cinchona, serpentaria, camomile, slightly acidulated with sulphuric or nitric acid, may in general be employed with advantage. The diet during this period should be mild, digestible, and nourishing, and particular care must be taken not to oppress the stomach, by taking more food at a time, than can be easily digested. Weak wine and water may be taken occasionally."

131. It is very necessary in this disease to keep the patient cool and quiet. The least motion would fatigue him, and will be apt to occasion weariness, and even faintings. His mind ought not only to be kept easy, but soothed and comforted with hopes of a speedy recovery. Nothing is more hurtful in low fevers than presenting to the imagination of the patient gloomy or desponding ideas. These of themselves often occasion nervous fevers, and it is not to be doubted but they will likewise aggravate them.

132. I wish to inspire not only patients in this fever, but their physicians also, with unceasing, unabated hope till the very last extremity. The changes for the better are often as sudden and unforeseen as those of an opposite character. The last breath alone should induce us to give over the patient.

YELLOW FEVER.—MALIGNANT FEVER.

THE following observations on yellow fever are extracted from Dr. Cartwright's "Essays." They are believed to contain a more

valuable and practical history of this fearful disease, together with the indications, and method of cure, than are to be found in any other publication. His observations were made at Natchez, and at Washington, Mississippi, in the years 1823 and 1825, during the prevalence of epidemic yellow fever.

“SYMPTOMS OF THE MALIGNANT FEVER OF 1823.—The disease was marked by three distinct stages, each of which had its peculiar symptoms. As it might in its first and second stages have been mistaken for *some other* malady, I will only describe the last stage, which presented features altogether peculiar, and could be confounded with no other disease whatever. In the last stage, there was apparently no fever, and little or no pain. The patient often regained his strength so far as to be able, in the most of cases, to walk about his room. His eyes were of a yellowish-red, sparkling appearance, and lent to a countenance otherwise of apathy, a strange expression of wildness and horror. Black dissolved blood oozed from the mouth, the gums, and the nose; coffee-ground vomit, or a dark brown flaky matter, with but little effort, was thrown from the stomach; anxiety, restlessness, and great flatulency of the stomach, portended and accompanied its discharge; spasms seized the muscles; the breathing became heavy, slow, and irregular—attended often by a hoarse, deep, sullen sound. The speech became incoherent; yet when the patient was spoken to, he appeared to be able to collect himself so far as to answer questions rationally, and although sensible of his situation, seemed resigned to his fate. These were the symptoms that characterized the third or last stage of the disease. Although all of them did not invariably occur in every patient, yet a sufficient number were generally present to point out the character of the disease to the medical attendant, the moment he entered the sick room. Having thus grouped together the most striking symptoms which characterize the last stage of the disease, I now proceed to a more particular description of it. As soon as the disease passed into the last stage, *fever*, in the etymological sense of the term, entirely disappeared, and all severe pain subsided. The patient, before debilitated, without any sensible evacuation having taken place, either from the kidneys, liver, or skin, would often regain his strength so far as to be able to walk about the room. The pulse was seldom above, but more often *below*, the healthy standard; the same may be said of the temperature of the surface. If the disease paused in its progress, it was fallacious; for soon the appearance of black vomit, or some other untoward symptom, blighted the

hopes that might have been entertained of recovery. In this stage the skin was not dry, but always somewhat moist; yet had a greasy, lifeless feel. Great irritability of stomach was a common and troublesome symptom in this, as well as in the first stage. It generally preceded the black vomit, and although the straining, in the act of vomiting, was much greater before, than after the occurrence of this fatal symptom, no matter of any kind was ejected from the stomach, excepting the drinks, and a little glairy matter, resembling the white of an egg. A remarkable phenomenon that took place in the latter part of this stage, was the facility with which the bowels were often moved. Any cathartic would now readily purge, notwithstanding the previous paralysis of the bowels; yet no other part of the system but the alimentary canal, seemed to be affected by whatever remedy was given; no bile was discharged by purgatives; diuretics had no effect on the kidneys, nor emetics or sudorifics on the skin. The whole alimentary canal seemed to be as much insulated, as if it did not belong to the rest of the system. The sympathies of the various organs were suspended, as a remedy applied to one, produced no effect on another.

A long expiration, followed by a quick inspiration, gave a peculiar catch or jirk to the breathing. Sometimes one side of the chest, in respiration, acted before the other; particularly in those patients in whom death took place by the lungs. The disease generally terminated fatally on the third day, or the patient speedily recovered. The milder cases run on to the fifth: there were some protracted cases: some few reached the thirtieth day. In three cases, in which the disease passed the fifth day, the skin, throughout its whole surface, assumed a bright yellow hue—the tunica conjunctiva particularly. The bright yellow skin never occurred before the third day: the skin, it is true, became yellow very frequently by the third day, yet the color was not bright, but of a muddy yellow, wanting the glossy hue of the more protracted cases. In these, convalescence was very slow. The apparent absence of fever, was not only a characteristic symptom of this disease, but when accompanied with an accession of strength from no evident cause, invariably portended a fatal termination. The red eye was also a characteristic symptom. It was present throughout its various stages. I do not here allude to the red eye from inflammation or engorgement of the tunica conjunctiva. This membrane was, sometimes, engorged with blood, and occasionally inflamed, but more generally, it was of a yellowish tint, and sometimes its structure presented no unusual appearance. In the last

stage of the disease, it was frequently moistened by a fluid more glossy and of more consistence and tenacity than natural. When this membrane, in the first and second stages, had been inflamed, in the last stage a purulent matter would be seen to adhere to it, or a bloody water run from it. But whether the tunica conjunctiva was inflamed or not, the eye continued to have, throughout the various stages of the disease, a yellowish-red gleaming appearance—not unlike that of a cat in the dark. This peculiar appearance seemed to depend, not upon any affection of the tunica conjunctiva, but upon some change which had taken place deep within the globe of the eye, as if the pigmentum nigrum were changed to a greenish brown—and instead of absorbing all the rays of light, reflected the red and yellow rays; thus giving to the organ a yellowish-red, gleaming appearance. The red eye of yellow fever, although it may be combined with, is very different from ophthalmia. It has not the arid look of ophthalmia; it bears the light without becoming bedewed with tears; and the patient does not, as in ophthalmia, blow his nose, to free the canalis nasalis of tears. In ophthalmia the patient cannot open his eyes in a strong light without considerable effort, and he also suffers great pain from its stimulus; but in yellow fever, he often starts up and opens his eyes in a strong light, without an effort and without suffering pain; and when his wants are supplied, he half shuts his eyes, not as if the light were painful, but only too dazzling. The red eye not only characterized the disease, but seemed to be peculiar to it. These are the symptoms of the third or last stage; the first consisted in a *broken* or irregular *reaction*, and the second or middle stage, in a *general* excitement diffused throughout the system. The second stage, or stage of general reaction, scarcely needs to be described, as it is so similar to what occurs in other diseases. In this stage, the whole surface of the body was preternaturally hot, the pulse full and strong, the pain in the head and back almost intolerable, and the thirst insatiable. Its duration was from one to forty-eight hours.

In a great many cases, the worst cases too, the state of the system which constitutes this stage, never occurred; but the disease passed immediately from the first to the last stage, without going through the second stage of reaction. These were called the cold cases of yellow fever, or yellow fever without reaction.

The approach of the first stage of the disease was announced by an intoxicated appearance, and a remarkable exhilaration or depression of spirits, and was so ushered in by a cotemporane-

ous sensation of heat and cold. The patient, although complaining of great internal heat, was often found under one or more blankets, which he would not permit to be removed. His skin, which to him felt excessively hot, was often actually cold to the touch. Yawning, stretching, soreness of the flesh, achings of the bones, and at length flatulency of the stomach, with great weight and oppression about the præcordia, took place, followed by pain in the head, stomach, and back.

The pain, in this stage, was never so severe as in that of general reaction. Indeed, it was sometimes entirely absent. It was remarked by a very intelligent and accurate observer of the disease, Dr. Gustine, that the most fatal cases were those which were attended with the least pain. General reaction never took place in those cases; the disease was always more fatal when the excitement never became generally evolved, and hence pain, a consequence of increased sensibility, which is necessarily associated with a diffused excitement, never occurred. A want of thirst also attended the disease in its first stage. The tongue was then seldom much furred; its edges were often red; sometimes it presented no unusual appearance in the most malignant cases. The patient, in this and the second stage, was as anxious about living, as he was indifferent and careless of life in the last stage. As the first stage advanced, a violent vomiting would often come on, attended by spasms in the legs and arms; a slight perspiration, unequally diffused, would bedew the skin; which, in a few minutes, would dry up, and again appear, as if forced out by the violent exertions of vomiting.

The ataxic or broken reaction was now the most evident; as the head and breast were burning hot, the extremities cold; the temporal arteries throbbing violently; the pulse at the wrist small and feeble. On placing the hand over the abdomen, a strong pulsation could be felt. The patient became more restless, and suffered more pain, in proportion as the fever (strictly so called) spread itself over the system. At length, the ataxic reaction, or partial fever of the first stage, passed into a general reaction or fever, constituting the second stage of the disease, unless by a want of energy in the system, or prudence in the practitioner, it became gradually extinguished by the apyrexial state, which constituted the third or last stage. When it was about to make this unfortunate transition, the fever, which had spread itself only half over the system, gradually abated, and left the patient with apparently no fever. The duration of the first stage was generally from one to

twenty-four hours. It could readily be distinguished from the second period by the partial evolution of heat in the one, and the uniformly hot surface of the other. The patient was found covered up with bed clothes in the first stage; but in the second and third he greatly preferred lying entirely naked.

Treatment.—In the first stage of yellow fever, or in that which consists of an ataxia or crippled reaction, when the blood is unequally determined, the heat unequally diffused, sensation impaired, and secretion suspended, I found no other remedy, or combination of remedies, which produced such decided effects as tartar emetic in full doses. It, however, seemed sometimes inadequate to make a sufficient impression on the torpid system. When given in this stage of the disease, its effects were not *so soon* apparent as in the healthy state of the system, or in less violent diseases. Very often, it would be an *hour*, or *more*, after a full dose had been taken, before the system appeared to feel it. At length that peculiar sensation of heat and cold at the same time, would somewhat yield to a sensation of heat only: the temperature of the skin would become more uniform, and as the excitement was brought out, great distress would ensue, and the system appeared to arouse from its torpor, and to regain, in some measure, its organic sensibility. Some one or more of the great organs of secretion now took on a secretory action. The nausea, the retching, and anxiety, soon gave way to full vomiting, first of phlegm, then of bile. This, to a spectator, was an alarming period in the disease, and most distressing to the patient. The powers of life would sometimes appear as if they were about to give way under it, but happily it was only in appearance. The vomiting at length subsided, and the patient enjoyed a little respite from his sufferings, and, bathed in a perspiration, he would fall into a slumber of short duration; for these were only the first effects which tartar emetic produced on the system. Soon, reaction took place, and the disease passed into the second stage; but the reaction was general, and lost its ataxic or broken character; it was accompanied with a hot skin, violent pain, and a full, strong tense pulse. The patient would now complain of excessive misery. I delighted to see the disease come out thus openly, and show itself by fever and pain, for although the patient might fancy himself worse, yet he was far removed from the danger which attended on the ataxic fever from which his system had just emerged, and only required a bold use of the lancet, and other remedies hereafter to be mentioned, to restore him to health. But it was not always

that tartar emetic, when given in the first stage, would produce vomiting. In those cases in the first stage, in which the skin was cold, and even when the reaction was ataxic and scarcely perceptible, the organs as if palsied, secretion entirely suspended or strangely vitiated, the stomach irritable, and little or no pain complained of, tartar emetic in full doses might be given without producing vomiting. Strange as it may appear, tartar emetic in such cases was a most powerful stimulus; it brought out the excitement, heated the skin, raised the pulse, allayed the irritability of the stomach, restored sensibility to the organs, and finally awakened one or more of them, the kidneys, skin, &c. to active secretion. To have this effect, it should be given in doses of from three to ten grains every one, two, or three hours, distilled in a small quantity of water, or what is better, as I have since learned, in similar states of the system, in pills. When secretion has been brought about by the remedy used in this way, and the excitement developed, it should not at once, but gradually, be discontinued, by giving smaller portions at longer intervals. Should a vomiting ensue before the skin has its heat and sensibility somewhat restored, bile will rarely be evacuated; in this event, another dose of the medicine should be immediately given, and repeated whenever great nausea occurs. I have rarely seen this practice fail, in such states of the system, to check the vomiting and heat the skin, when mustard and blisters had failed. It will be remembered that those which are denominated cold cases, are the most hopeless. I have used the hot bath, frictions, sinapisms, blisters, besides various internal stimulants to bring on reaction, but the combined influence of all these remedies has never had the same beneficial effect as tartar emetic alone. But in some cases of this kind, particularly in hard drinkers, it fails to produce secretion, and to develop excitement. It may be imagined by men in their closets, that these are cases of congestion only, which congestion could readily be removed by small and repeated bleedings combined with internal and external stimulants. If the malignant nature of these cases depend entirely on congestion, it is a very different congestion from that which takes place in many other diseases. In the latter, I have often succeeded by removing the congestion, by blood-letting, combined with external and internal stimulants; but in the cold cases of yellow fever, *never*. In such cases, if blood be taken away, even should the patient not immediately sink under it, so far from reaction being produced, the blood vessels lose

more and more of their contractile power; stimulants impart no strength; the warm bath and rubefacients produce no more effect on the skin than if applied to so much leather; the organs become more paralyzed; the sympathies more deranged; and the whole system soon appears as if it were divided into different parts, one not depending on another, and each having the principle of life diminished in it. Instead, then, of using blood-letting in such cases, to remove congestion, I used tartar emetic to produce secretion, and to develop the excitement. Although tartar emetic was sometimes inadequate to produce these desirable effects in the cold cases, it scarcely ever failed to be eminently serviceable in the first stage of cases of a less malignant nature. The earlier it was given in the first stage of the disease, the better. When given freely, so as to produce secretion in the liver, kidneys, and skin, a general and equable reaction soon succeeded. It shortened the duration of the first stage, or that of ataxic reaction, and thereby converted a highly *malignant*, into a *mild* case of yellow fever. For in the mild cases, when left to nature, the first stage continues but a short time, and the disease soon passes into the second, or that of general reaction. These are the cases which bear bleeding and purging so well, and in which emetics are of no service (unless given before the general reaction has taken place). The good effects of emetics appear to depend on their ultimately producing a general and equable excitement throughout the system. In the more malignant forms of yellow fever, the stage of ataxic reaction, when left to nature, continues a longer time; and should the second stage, or stage of general excitement ever occur, its duration is so limited, that a sufficient time is not given to subdue the disease, before it passes into the third and last stage. Tartar emetic, then, given in the first stage, shortens its duration, and places the system in a similar state to what we find it in the milder forms of the disease. And in proportion as the ataxic stage is shortened, so is the stage of general excitement prolonged, and the chances of the patient's recovery greatly increased.

When I first treated yellow fever, in its first stage, by tartar emetic, and witnessed the violent reaction that shortly succeeded its use, and heard the agonizing shrieks of my patients from the pain that attended the increased sensibility and universal excitement that succeeded it, for a moment I thought I had done wrong, and would have ceased to use it, had I not found that this was the only state of the system in which the lancet could fearlessly and

successfully be used. Even when the lancet was not used, the general reaction induced by tartar emetic, was nothing like so fatal, as when an ataxic state cloaked the violence of the disease.

Of Blood-letting.—If blood-letting were resorted to before the development of general reaction, the reaction which had yet only partially spread itself over the surface, disappeared; and the pain would subside; and this too before the quantity of blood taken away was in any degree considerable. Medicines did not operate, and the disease at once passed into the last stage. During the ataxic reaction, in vain may we be told to bleed to the relief of the symptoms; for they grow worse while the blood is flowing, and continue to become more alarming, and that in proportion to the quantity of blood taken away.

Blood-letting, in this stage of the disease, at once *quelled* the efforts which the system was making to establish a general reaction. When I first witnessed these effects produced by the loss of a small quantity of blood, in the first stage of the disease, I waited with confidence to see the system react, as I had been in the habit of doing in other diseases—but I waited in vain. The disease pursued a similar course to the cold cases—excitement never took place. When a feeble and broken reaction has taken place, to attack it by the lancet, is like attacking the first phalanx of an enemy, when he attempts to come out of his intrenchments, instead of waiting until the main body has appeared in the open field. But in the second stage, in which the heat of the whole surface is excessively increased, the pulse full and strong, the patient lying naked, and calling on the attendants to fan him, and to give him cold water, we may bleed *fearlessly* and successfully. A small quantity of blood will not subdue this general excitement, as it would the partial or ataxic reaction; but this state of the system required, and could bear it to be taken away by quarts. The changes which copious blood-letting produced on the system in this stage, were a reduction of the temperature; an alleviation of severe pain; a susceptibility to the impression of medicines, and a soft state of the skin and pulse. No secretion, or at least no healthy secretion, was produced by blood-letting, if used in the ataxic reaction of the first stage: but secretions of a proper character followed the use of the lancet in that of general excitement. The effects produced on the system by blood-letting in the reacting, so far from hastening the disease into the last stage and bringing on fatal symptoms, prevented it from passing into that state, and robbed it of all its violence and danger.

Purgatives.—If purgatives were given immediately on the accession of the first stage, they sometimes produced secretion, which was followed by a reaction more or less general. But it was only in the milder forms of the disease in which the organic sensibility was not greatly impaired by the first shock of the disease, that purgatives produced secretion. Drastic purgatives, in almost any state of the system, would, after so long a time, force away watery stools, which, like similar secretions in cholera morbus, soon exhausted the system, without producing any beneficial effects whatever, either immediately or remotely. The uncertainty of purgatives in producing secretion of the proper kind, even in the milder forms of the disease, and the tardiness with which general reaction succeeded such secretion, induced me, in the first stage of the disease, to substitute in their stead tartar emetic, which was attended with the happy effects already mentioned. The states of the system in which I used purgatives were chiefly those in which blood-letting was proper. In conjunction with venesection, to subdue the excitement of the second stage, purgatives were found to be valuable remedies. In those cases in which general reaction was slow in developing itself, (after tartar emetic had been used to a sufficient extent,) purgatives were sometimes given before recourse was had to the lancet—but in all cases in which general excitement quickly succeeded the use of tartar emetic, blood-letting preceded purgatives. When the excitement had once been fully developed, whether it were brought about by the system alone or by the aid of tartar emetic, various and apparently opposite modes of treatment will sometimes arrest its progress and restore health. In a Mr. Andrews, in whom reaction had been produced by tartar emetic, the excitement was subdued by keeping up an artificial bilious diarrhœa by purgatives, unassisted by blood-letting. It was not necessary to bleed only but to produce secretion in the skin, the liver, and the kidneys. Sometimes secretion in one or more of these organs ensued from blood-letting only. If bilious dejections succeeded the use of the lancet, and the kidneys still refused to secrete urine, diuretics, not purgatives, were indicated. For, in such circumstances, the effects produced on the system by purgatives were an increase of the torpor of the kidneys, the disease was prolonged and rendered more difficult to manage, and more dangerous in its progress. If all the organs still continued torpid after blood-letting, the practitioner should exercise his judgment in deciding whether he had better attempt to produce secretion in the liver by purgatives, in the kidneys by di-

uretics, in the skin by sudorifics, or in the glandular system by mercury. For, to give purgatives, diuretics, sudorifics and mercury at the same time to produce secretion in all the organs, their operation would counteract each other, and "we would obtain nothing, by asking of nature too much." Although it is no doubt improper to administer at the same time various kinds of medicines, yet any remedy, which possessed more than one property, was often found more beneficial than such as possessed one only. Thus, if mercurial cathartics failed to cause secretion of the proper kind from the liver, they sometimes produced it in the salivary glands; and spirits of turpentine acted either on the kidneys or bowels. Whenever purgatives produced a secretion of bile—the fever, pain, oppression, thirst, and restlessness abated; and secretion in the other organs shortly succeeded that of the liver, and the disease soon yielded. But when purgative medicines were followed by copious bloody, watery discharges, or by any highly vitiated secretion, the effects which they produced on the system were to exhaust its energies, to produce spasms of the muscles, to increase the flatulency of the stomach, and to cut asunder the thread which ties together in sympathetic union the various organs of the system, and the disease passed into the third and fatal stage. Highly drastic purgatives, in large doses, are generally followed by secretions of some kind. As long as they caused secretion of the former sort, like other purgatives, their effects were beneficial; but when they produced, as they too often did, those of the latter kind, their effects were exceedingly pernicious. When the system was placed in a proper state for the exhibition of purgatives, those of the milder class would be followed by bilious discharges, which were beneficial; but when it was not in this state, drastic purgatives would produce serous, mucous, or sanguineo-serous discharges, which were extremely injurious. As the milder cathartics were found to have all the *good* of the drastic, and none of their *evil* effects, I preferred mild to drastic purgatives. Late in the epidemic I obtained some of the croton oil. From the trials I gave it, I am induced to believe that it will be found to be a valuable remedy in many cases of yellow fever. Every time it was used, copious bilious dejections ensued. It was, however, only resorted to in those states of the system in which I would have used other purgatives. As this medicine is so pleasant to take, and can be retained on the stomach in cases in which almost any other purgative would be rejected, it promises to be of great utility in many forms of disease.

Mercury.—Given in the first stages of the disease, mercurial preparations, in by far the majority of cases produced no evident effect on the system, and consequently none on the disease. Sometimes, however, even in this stage, they produced ptyalism, yet such ptyalism had little or no effect in arresting its progress. I have seen as many patients die whose mouths became sore early by one or two doses of calomel, as I ever saw recover. If mercurial preparations were had recourse to in the second stage, after the system was reduced by the lancet or by any other means, they often brought on ptyalism. Such ptyalism was attended with a soft state of the skin and pulse, with a free secretion of bile and urine, and with a return of the organic sensibility of the whole system. With such ptyalism I never saw a patient die, either in yellow or bilious fever. But if the reaction of the second stage be not reduced by the lancet or other remedies, and has not had time to run itself down, mercury in such a state of the system, especially in the form of calomel with opium, often produces the following effects: a blackness of the gums, succeeded by a sloughing that lays bare the alveolar process at different points, and which is accompanied with a perpetual oozing of blood, to the amount of a quart or more in twenty-four hours; or the gums and salivary glands become greatly swollen, ptyalism ensues for a few hours, then hemorrhage, and then both the secretion of saliva and the flow of blood subside, and a burning heat, an alkaline breath, and dryness of the mouth and fauces take place, until either the hemorrhage or ptyalism return. When the mouth is thus affected from mercury, the skin is dry, the pulse tense, slow or intermitting; the urine red and scanty; the stools, if any, contain no bile; the organic sensibility of the system is far from being restored; the blood is unequally distributed, as may be seen from the leaping of the carotid and temporal arteries, from the abdominal pulsation, and from the unequal evolution of heat. The influence which these effects of mercury produce on the disease, is to prolong, but not to cure it.

There is a state of the system which, however, occurs more often in bilious than in yellow fever, in which I have found the specific effects of mercury to be particularly serviceable. After reaction is subdued; after the skin, kidneys and liver have been excited into a secretory action—owing to some organ having, from some cause or other, sustained a great shock, a torpor will again take place in one or more of these organs, that produces great irritation in the system, preventing sleep, destroying the appetite, pro-

ducing fever, and thereby exhausting, more and more, the already too much exhausted patient. If the torpid organ be excited into action by any other remedy but mercury, as soon as it ceases to feel the impression of the remedy, it ceases to secrete; here mercury, by keeping up an impression not *transient*, as the most of other medicines, but permanent, will, by enabling the diseased organ to regain its powers, restore the patient to health. In the above state of the system, and in many others in which the specific effects of mercury are indicated, I had been taught to use calomel in small and frequently repeated doses; but experience has convinced me, that there is scarcely any state of the system requiring the specific action of mercury, in which calomel in large doses is not the best means to effect it. Scruple doses of this medicine will not only induce the specific effects of mercury sooner, but will be followed by fewer disappointments, and less inconvenience and danger, than when smaller doses of that medicine, or any other form of mercury, have been resorted to.

Diuretics.—As a copious secretion of urine was a favorable symptom, and a suppression of it alarming and often fatal, diuretics were remedies, in many cases, of great importance. When purgatives would not produce a secretion of bile, instead of trying by reiterated doses of these medicines, more especially of a drastic nature, to force away alvine discharges, which in such circumstances would generally be of a serous kind, that tended only to weaken the patient, I endeavored to excite the kidneys to secretion by diuretics.

I have often had the pleasure to find that the *urinary* secretion produced by them, was of equal advantage in arresting the progress of the disease, as the *biliary*, by purgatives. Soon after the secretion of urine was established, the skin and liver would both generally begin to yield their peculiar secretions, and the disease would no longer be able to resist the efforts of these allied organs.

Diaphoretics.—When neither the liver or kidneys could be excited into action, diaphoretics were sometimes serviceable. But the great irritability of the stomach, the distaste to all medicines, the want of nurses, and the rapid march of most cases, prevented me from encumbering my practice by such feeble medicines, in the treatment of a disease, which seemed to require only a few simple, efficient, and well-timed remedies.

Epispastics.—In every stage of the disease I have used blisters, applied to the head, over the stomach and bowels, to the extremities, and down the spine. The benefit, however, which I had

reason to expect, from my experience with them, in bilious fevers and other diseases, never followed their use. Sinapisms to the extremities, to assist tartar emetic and the hot bath, to produce reaction in the cold cases; or after reaction had been reduced, to stimulate the prostrated patient, were far more serviceable than blisters. The former acted much more quickly, and produced greater pain than the latter.

Stimulants.—How the bark and wine would have answered in the first stage of this disease, to change the ataxic reaction of that stage into a general reaction, I cannot from experience determine.

The Spanish practice in the Andalusian fever, consisted in large and repeated doses of bark, given immediately when the patient began to complain. This practice, we are told by Dr. Johnson, was attended with extraordinary success. I very much suspect that the good effects of bark, in that fever, principally depended on its transforming the broken excitement, with which the disease commenced, to a general reaction, or open case of fever. I lost one patient who drank a large draught of ardent spirits, with pepper in it, immediately after the attack.

The fever became developed, but great gastric distress attended throughout its course. Antopsic appearances proved the existence of unusually high inflammation in the stomach.

It is probable, from this case, that such stimulants as ardent spirits, although they may develop the fever, may at the same time produce a dangerous visceral inflammation. Whether or not, the bark would have the same effect, I cannot tell. Tartar emetic, however, not only developed the fever, but cured any visceral irritation it may have produced, by the copious secretory action that succeeded.

Of the Bath.—The cold bath, if used in that stage of the system, which I have called ataxic reaction, was evidently injurious. I cannot better describe its effects than by the following case. Mrs. Rice, in the first stage, used ablutions of cold water and vinegar. The efforts made by the system, towards general reaction, became immediately subdued—and, to use her own language, “the cold water drove the fever in upon her heart and stomach.” Great coldness and shivering, with internal heat and oppression succeeded its use. Reaction never took place, and the disease passed at once into the last stage; and when I was called to see her, fatal symptoms had appeared. Had an emetic, instead of the cold ablutions, been tried, it is possible that reaction would have been

general; would have borne blood-letting, and have been attended with a different result. The only condition of the system, in which cold ablutions or affusions were advantageous, was when the surface was uniformly and preternaturally hot. In this epidemic, I never found any difficulty in reducing the reaction by the lancet, and other remedies—consequently I seldom ever found it necessary to call in the aid of cold affusions.

Cold affusions would seem to be prejudicial in all acute diseases in which a general and equable excitement was not evolved. Although, during this general excitement, I can say nothing in their favor, in the disease under consideration, yet I do not wish to *generalize* such excitement, with that which occurs in many other fevers. In the yellow fever of Natchez, the heat of the surface could be, in a great many cases, too readily and easily reduced, the disease still remaining, after that reduction, firmly fixed in the viscera. But in violent bilious fevers, to reduce the reaction of the heart and arteries, and the excessive heat of the surface, blood-letting is often inadequate, and here cold affusions are not only useful, but almost indispensable. For the excitement is sometimes so pertinacious, that blood-letting, after it has been used to a certain extent, if still persisted in, so far from diminishing the reaction and the heat of the surface, adds strength to the one and fuel to the other. This state of the system, so well suited to the use of cold ablutions and affusions, never occurred in the Natchez epidemic. Cold affusions are generally said to be contra-indicated by great visceral derangement. I very much suspect that it is in consequence of these derangements being, in the most of cases, attended with a partial or broken reaction.

In the yellow fever under review, when reaction was reduced, or on the wane; if secretion did not take place, the *tepid* bath, apparently by removing the remains of morbid heat, and by restoring the natural sensibility of the skin, enabled that important organ to take on a proper secretory action. But cold water, by carrying off too much heat, reduced the temperature of the skin below that degree which is compatible with natural sensibility, and consequently with healthy secretion. Pleased with the effect of the *tepid* bath, after the use of the lancet in the reacting stage of the disease, I resorted to the same remedy in the ataxic stage. The temperature of the bath was ninety-six degrees. The patient, as soon as immersed, complained of being disagreeably cold; he was taken out in a shivering fit, and was shortly afterwards immersed in a bath, so hot as to be extremely painful to my own

hands, yet he did not in the least complain of it. His skin soon became generally warm, and an emetic which he had previously taken, began now to operate. He removed from the bath, and in a few hours, a fever so violent ensued, that copious blood-letting was employed to subdue it. The not bath, whenever it could be procured, was employed in conjunction with emetics, in the cold cases of yellow fever, in order to bring about general reaction. If emetics were not used in conjunction with the bath, the skin, it is true, would be heated, but its heat, like that of any inanimate substance, would soon subside on being removed into a colder medium.

To sum up my experience with this remedy. The cold bath, or cold affusions, are best suited to a pertinacious reaction or irritation, which will not yield to blood-letting; that the tepid bath is most serviceable after blood-letting has left, not a pertinacious reaction or fever of irritation, known by great heat of the skin, quick and irritable pulse, and immoderate thirst, but only a slight degree of morbid heat, which, nevertheless, requires to be carried off before the skin can regain its organic sensibility and take on a proper secretory action; that cold water, so useful in the former state of the system, would, in the latter, carry off too much heat, and would thereby leave the skin in as unfit a condition to resume its healthy secretory action, in this state of the system, as an excessive morbid heat had rendered it unfit for the same process in that: that the tepid and cold bath act on the same principle, the one being milder than the other; that the hot bath acts on a different principle from the cold or the tepid, by increasing the heat of the surface, and by producing reaction.

The following remarks are made on the disease, as it appeared at Washington and Natchez, in 1825.

THE yellow fever of Washington, like that of Natchez, in 1823, had three stages. The first stage was generally preceded by, and attended with, catarrhal symptoms. It was known by the patient's sensations being no true evidence of the actual coldness or heat of his surface; by the heat of the surface being unequally diffused, the head and breast hot, the extremities often cold; by the patient preferring to be wrapped up in blankets, although at the time, his skin may have been pungently hot to the touch; by the chilly feeling being greatly increased, if the patient merely reached out his arm to have his pulse felt, or if any of the bed-clothes were removed, although he might have complained of these making him disagreeably hot, by a copious perspiration occasionally taking

place, and drying up without relieving the disagreeable chilly feeling, abating the pungent heat of the skin, equalizing its evolution, or establishing the lost relation between the patient's feeling of heat, and the real heat of his body. So different were the sensibilities, both organic and animal, in this fever, from a healthy condition of the system, that I have known patients to complain of their extremities being as cold as ice, when they were actually burning hot. I was forcibly impressed with this fact, on seeing patients bear to their extremities, particularly their feet, applications sufficiently hot to corrode or blister the skin, and produce great pain, were not the organic and animal sensibility of the part very different from health. I recollect of having affronted one person, from having him put in a tub of water, disagreeably hot to my hands, not because he found it too hot, but too cold. The most prominent features, however, of this stage of the disease, were an ataxic reaction or irregular energy of the arterial system, accompanied with an increased determination of blood to the head, a flushed countenance, red gleaming eye, and strong pulsation in the carotid, but not in the radial arteries. The breathing was often laborious, and frequently interrupted with yawning and sighing. The stomach was flatulent, and the patient complained of great soreness in his muscles and joints, and of more or less pain in his head and back, which increased greatly as the disease approximated to the second stage. Frequent vomitings of a vitiated fluid, at first mixed with bile, but afterwards containing no bilious matter, generally terminated this stage. The second stage was known by the patient losing all his chilly feelings; by his throwing off the bed-clothes, calling for cold drinks, being tortured with the severest pain in his head and back, tossing himself from side to side in his bed, or going from one bed to another; by his uniformly hot surface, by a diminution in the secretory processes; to wit, a paucity of bile and urine, great dryness and heat of the skin, and mucous membranes, and lastly, by an increased energy of the whole arterial system. The third was pointed out, by the heat of the surface having diminished, but not the patient's sensation of heat having *proportionally* diminished, by a slow irregular respiration, or even when the number of respirations, differed but little from the healthy state, by the chest rising and falling by steps, as if the lungs had to make two or more efforts to *draw in* the air, and two or more to *expel* it again; by the expiration being often cut short, or interrupted, in consequence of a sudden inspiration taking place, at any one of these steps, before a natural collapse

of the lungs had taken place, and *vice versa*, by the slowness of the pulse, the wildness of the look, the alienation of the mind, the confidence of a speedy recovery; by the yellow skin, accession of strength, the black vomit, and hemorrhages from the mouth and nose.

The first stage, in some cases, quickly passed into the second, in others, it continued twenty-four, or even forty-eight hours, before the reacting stage ensued. This stage, in some, never occurred, the disease passing at once from the first to the last stage, while in others badly managed, it lost many of its characteristic features; viz. there would be great heat, thirst and pain, yet a quick irritable pulse, which would not bear the lancet; a comatose state of the brain, similar to typhus fever, accompanied with extreme irritability of the stomach, and a strong disposition in the bowels to take on a watery purging. Such cases were very fatal. The disease, not only in Washington, but in Natchez, the present season, differed from that of the latter place in 1823, in its very great liability, in many cases, to be attended with copious and vitiated secretions, not only in its first but in all its stages. Under the copious and depraved evacuations, from the stomach or the bowels, excited by small nauseating doses of tartar emetic, a little antimonial powder, an emetic or any cathartic improperly timed and regulated, the system became robbed of its energies, and instead of a free and open excitement, or a soft state of the skin and pulse, the pulse would become smaller and quicker, coldness would take place, first in the toes and fingers, and spread gradually over the extremities, rendering them insensible to blisters or sinapisms; comatose symptoms, with an increase of the irritability of the stomach would supervene, attended with delirium; the patient would refuse all medicines, and vomit every thing which was forced upon him. The disease more or less, assumed this highly dangerous character, in proportion as the evacuations from the alimentary canal, had been more or less copious, or more or less vitiated. A constant vomiting of phlegm, or a limpid fluid, whether in large or small quantities, served more to distress than relieve the patients: such vomitings produced no good effect either on the skin or pulse. When the alvine evacuations were of a limpid or dark watery character, they were generally copious, and sooner exhausted the patient, than when they consisted of phlegm or a gelatinous substance. The latter were less copious than the former. Stools consisting of a thick white jelly, resembling coagulable lymph, in quantities from two to six ounces, sometimes were discharged.

These, however, did not much exhaust the patient, and were rather favorable than otherwise, as they frequently preceded the evacuation of *thick dark bilious* stools, which always relieved the symptoms, and strengthened the patient. But such should not be confounded with the *dark watery* evacuations, which have the opposite effect on the system. In the fever, both of Washington and Natchez, it was no unusual thing for persons when first attacked, before medical advice was obtained, to take some simple medicine, calculated as they thought, "if it did no good, to do no harm." Lee's pills, calomel, salts, small exciting doses of tartar emetic, &c., were generally the medicines used; which, not being calculated to produce the *proper kind* of secretions, irritated the system, already ripe for it, into deranged organic actions, attended with copious and depraved secretion, which soon prostrated the system. It was no unusual thing for a dose of salts to produce ten or dozen, copious watery evacuations, or for a grain or two of tartar emetic, or a dose of ipecac., to excite a constant and distressing vomiting, *unattended* with bilious secretion. In 1823, secretion of *any kind*, was difficult, in the early stages of the disease, to be produced; in 1825, it was equally difficult to produce *bilious* secretion, while watery, or vitiated secretions, were too *readily* excited. To guard against the latter, and to effect the former, constituted the principal difficulty in the treatment of the yellow fever of 1825, which I now proceed briefly to notice.

Treatment.—As in 1823, during the first stage, or that of ataxic reaction, tartar emetic was found to be the most useful remedy. I generally gave from six to ten grains at a dose, and repeated it in smaller doses, until it either produced bilious emesis, removed the chilly feelings, developed an excitement throughout the system, produced secretion in the skin or kidneys, subdued the ataxic fever, or palsied the deranged organic actions. Vitiated secretions seemed to depend on the *latter*, as, in many cases, the first doses of tartar emetic *put a stop* to the vomiting of a vitiated fluid, which had taken place *before* its exhibition. Tartar emetic, however, used in small and repeated doses, often rendered the stomach more irritable, and even when used in effectual doses, it often did harm, unless properly managed. When the chilly sensation was very great, the warm or hot bath, if used a little before, or at the time, the emetic was given, enabled it to produce bilious secretion much more readily, and with much less distress to the patient, than when the emetic had been trusted to alone.

Vitiated secretions, and other bad effects, were often thus pre-

vented from taking place, by acting on the deranged organic sensibility of the system, *without*, by the warm bath; *within*, by tartar emetic. A warm diaphoretic, as snake root, by being given in conjunction with the tartar emetic, in cold and torpid states of the system, was found of great benefit in enabling it to bring about the proper kind of secretions, to guard against those of a vitiated character, to arouse the stomach from its torpor, and to prevent the remedy from having any bad effects on the system.

By an emetic properly managed, if given early in the disease, not only the fever of Washington, but that of Natchez, was often cut short at once, and the patient recovered without further trouble, whilst the mildest attacks, if left to nature, ultimately seldom failed to prove fatal. If the disease did not yield at once to emetics, general arterial reaction ensued in the most of cases, requiring the lancet for its reduction, together with purgative medicines, which brought on bilious evacuations, that soon relieved the patient. Sometimes, however, when emetics had not been used at a period of the disease sufficiently early, or if used, had not been properly managed, or if properly managed, owing to some peculiarity of the case, had not produced their general beneficial effects on the system; but most generally, when emetics had been entirely omitted, it was difficult to produce by purgatives, the *proper kind of evacuations* from the bowels—I mean evacuations of a dark bilious matter of tolerable consistency. In such cases it was very difficult to retain purgative medicines on the stomach, owing to its irritability, and, if retained, even calomel would often produce watery evacuations. In such cases, to continue the use of this or any other purgative remedy, without first *altering* that condition of the system on which the watery evacuations depended, was to continue to use them to the destruction of the patient. Inasmuch as he became speedily exhausted under such evacuations, I made it a rule to check them by an enema, of a teaspoon full of laudanum in a little starch gruel, or by giving opium or its tincture. The next object was to *alter* that morbid condition of the system on which the watery or vitiated secretions depended. Tartar emetic, either with or without the addition of a little opium, in two or three grain doses, every one, two, or three hours; calomel, with two or three grains of opium, or with ten or twenty grains of camphor, repeated according to circumstances, and assisted by the warm bath, blistering, &c. were often found useful in *preparing* the system to be properly acted on by purgatives. A remedy, however, which appeared to suit some cases the best, was the sul-

phate of quinine, or, where the stomach would bear it, the Peruvian bark with cremor tartar and cloves, either of which was given without regard *to fever*, if such fever would not admit of blood-letting. Even when the fever (I mean heat of skin, &c.) was increased under this practice, the various organs of the system became more disposed to take on a proper secretory action, than before such fever had been excited. I am confident that I used the sulphate of quinine in too small doses in our late epidemic. Dr. Perrine assured me, that in the bilious fever in the country, ten or fifteen miles from Natchez—to prevent a watery purging, which so often took place in that disease, he resorted, after having premised sufficient blood-letting, to the use of the sulphate of quinine in eight grain doses, every two hours through the day, *notwithstanding the presence of fever*, and at night gave aloes, scammony and calomel in pills, still continuing the sulphate. He assured me that under this free use of the sulphate, the fever would abate, and the cathartic would produce thick, copious evacuations of a dark color, which would soon relieve the patient; whereas, to use the purgative, without the sulphate of quinine, if they operated at all, they only produced *watery stools*, which soon robbed the patient of his strength, and aggravated his disease. Dr. McPheeters and myself have both used, with a similar intention, the sulphate of quinine, after the plan of that excellent physician, Dr. Perrine, and we have found it even to surpass our expectations. The purgatives which could be the most relied on, in the epidemic of 1825 to produce bilious secretions, were calomel, aloes, and scammony, combined, the purified spirits of turpentine, and the croton oil. When there was much pain in the bowels, accompanied with tenesmus, the charcoal, as recommended by Dr. R. Jackson, was of great service. The best plan of giving medicines in cases of great irritability of the stomach, which neither sulphuric ether, opium, effervescing mixtures, &c. will allay, has heretofore been with me a desideratum in practice. The fate of a patient frequently depends on minutiae, too often unattended to in practice. It is an easy matter to prescribe aloes, scammony, jalap, &c. in order to purge a patient, who is constantly sick at the stomach. But the object of the prescription is often entirely defeated, in consequence of the patient refusing to take these remedies; or if he takes them, by the impossibility of his being able to retain them on his stomach. The best plan I ever tried, of giving these, and similar nauseous medicines, so as to obviate the inconvenience of their disagreeable taste, and to prevent them from being vomit-

ed, is to have the various purgative articles made into a soft mass with syrup. Any given quantity of this mass is to be enclosed in a very thin wafer, made of flour, and softened by being soaked a few minutes in water or milk. The enclosed mass is then put into a spoon with a little water in it, out of which the patient is to swallow it. After this manner, a patient can take *at one dose, a mass sufficient to make a dozen pills*, and he cannot without the strongest efforts throw it up from his stomach; he tastes nothing but the flour-wafer; and the nausea of his stomach is not increased, as it would be from his swallowing a quantity of bitter pills. In this way, a large quantity of Peruvian bark may be given at a dose, without the patient's tasting it. One table spoonful of flour, made into a *batter* with water, is sufficient to make sixty wafers. The plan of making them is, to have two smoothing irons heated, one of which is to be placed with its face upwards, on which a few drops of the batter is to be poured, and the other iron is then to be pressed upon it. The little cake, or wafer, thus made, is, as I before observed, to be soaked in water before using it, in order to make it sufficiently pliant to enclose the medicine. I venture to assert that whoever tries this plan of giving nauseous drugs, as aloes, &c. in cases of great irritability of the stomach, will seldom prescribe them in pills, syrup, or solution. Calomel, however, can be very conveniently given, floating on a common table-spoonful of common cold water. Spirits of turpentine should be purified by mixing it with alcohol. With these remarks on the manner of administering remedies in cases of great irritability of the stomach; remarks, though seemingly of little importance every where else, may not be entirely so at the bed side of the sick, I close what I have to say on the Washington yellow fever, the history of which disease, if it does nothing else, will show that an epidemic yellow fever is not necessarily confined to *water courses*.

MILIARY FEVER.

THIS fever takes its name from the small pustules or bladders which appear on the skin, resembling, in shape and size, the seeds of millet. The pustules are either red or white, and sometimes both are mixed together.

The whole body is sometimes covered with pustules; but they

are generally more numerous where the sweat is most abundant, as on the breast and back. A gentle sweat, or moisture on the skin, greatly promotes the eruption; but when the skin is dry, the eruption is both more painful and dangerous.

Sometimes this is a primary disease; but it is much oftener only a symptom of some other malady, as the small pox, measles, and nervous fever.

The miliary fever chiefly attacks the idle and the phlegmatic, or persons of a relaxed habit. The young and the aged are more liable to it than those in the vigor and prime of life. It is likewise more incident to women than men, especially the delicate and the indolent, who, neglecting exercise, keep continually within doors, and live upon weak watery diet. Such females are extremely liable to be seized with this disease in childbed, and often lose their lives by it.

Causes.—Violent passions or affections of the mind, as excessive grief, anxiety, thoughtfulness, and fear; watching; great evacuations; spare diet; rainy seasons; eating too freely of crude, unripe fruit, as plums, cherries, cucumbers and melons; impure water, or provisions which have been spoiled by long keeping: the stoppage of any customary evacuation, as issues, setons, ulcers, the bleeding piles in men, or the menstrual flux in women.

This disease in childbed-women is sometimes the effect of great costiveness during pregnancy; it may likewise be occasioned by their excessive use of green fruit, and other unwholesome things, in which pregnant women are too apt to indulge. Such women as lead a sedentary life, especially during pregnancy, and at the same time live grossly, can hardly escape this disease in childbed. Hence it proves extremely fatal to women of fashion, and likewise to those women in manufacturing towns, who, in order to assist their husbands, sit close within doors for almost the whole of their time. But among women who are active and laborious, live in the country, and take sufficient exercise without doors, this disease is very little known.

[Its most general cause, however, is the improper use of stimulating medicines in other diseases. "By a stimulating, sweating, and heating treatment, miliary vesicles may be produced in every variety of febrile disease." During the reign of the heating and sweating plan of treatment for fever, forty years ago, miliary fever was among the most common and fatal diseases; but since the introduction of the antiphlogistic and cooling method, it has become rare, and scarcely ever appears, except in its mildest form.]

Symptoms.—When this is a primary disease, it makes its attack, like most other eruptive fevers, with a slight shivering, which is succeeded by heat, loss of strength, faintishness, sighing, a low quick pulse, difficulty of breathing, with great anxiety and oppression of the breast. The patient is restless, and sometimes delirious; the tongue appears white, and the hands shake, with often a burning heat in the palms; and in childbed-women the milk generally goes away, and the other discharges stop.

The patient feels an itching or pricking pain under the skin, after which innumerable small pustules of a red or a white color begin to appear. Upon this the symptoms generally abate, the pulse becomes more full and soft, the skin grows moister, and the sweat, as the disease advances, begins to have a peculiar, fœtid smell; the great load on the breast, and oppression of the spirits, generally go off, and the customary evacuations gradually return. About the sixth or seventh day from the eruption, the pustules begin to dry and fall off, which occasions a very disagreeable itching in the skin.

It is impossible to ascertain the exact time when the pustules will either appear or go off. They generally come out in the third or fourth day, when the eruption is critical; but when symptomatic, they appear at any time of the disease.

Sometimes the pustules appear and vanish by turns. When that is the case, there is always danger; but when they go in all of a sudden, and do not appear again, the danger is very great.

In childbed-women the pustules are commonly at first filled with clear water; afterwards they grow yellowish. Sometimes they are interspersed with pustules of a red color. When these only appear, the disease goes by the name of a *rash*.

Regimen.—In all eruptive fevers of whatever kind, the chief point is to prevent the sudden disappearing of the pustules, and to promote their maturation. For this purpose, the patient must be kept in such a temperature as neither to push out the eruption too fast, nor to cause it to retreat prematurely. The diet and drink ought therefore to be in a moderate degree nourishing and cordial: but neither strong nor heating. The patient's chamber ought neither to be kept too hot nor cold; and he should not be too much covered with clothes. Above all, the mind is to be kept easy and cheerful. Nothing so certainly makes an eruption recede as fear, or the apprehension of danger.

The food must be weak chicken broth, with bread, panado,

sago, or gruel. Good apples, roasted or boiled, with other ripe fruits of an opening cooling nature, may be eaten.

The drink may be suited to the state of the patient's strength and spirits. If these be pretty good, the drink ought to be weak, as water-gruel, balm-tea, or the following decoction.

Take two ounces of the shavings of hartshorn, and the same quantity of sarsaparilla; boil them in two quarts of water. To the strained decoction add a little white sugar, and let the patient take it for his ordinary drink.

Treatment.—If the food and drink be properly regulated, there will be little occasion for medicine when the disease is primary—and when it is symptomatic, or brought on by improper treatment in other complaints, no regard is to be paid to it, but the original malady must be treated as though the miliary eruption had not appeared.

Some recommend blistering through the whole course of this disease; and where nature flags, and the eruption comes and goes, it may be necessary to keep up a stimulus, by a continual succession of small blistering-plasters; but we would not recommend above one at a time. If, however, the pulse should sink remarkably, the pustules strike in, and the head be affected, it will be necessary to apply blisters to the inside of the legs, and thighs, and to the back of the neck.

Bleeding is seldom necessary in this disease, and sometimes it does much hurt, as it weakens the patient, and depresses his spirits. It is therefore never to be attempted, unless by the advice of a physician. We mention this, because it has been customary to treat this disease in child-bed women by plentiful bleeding, and other evacuations, as if it were highly inflammatory. But this practice is generally very unsafe.

Great sickness at the stomach is apt to precede any fresh eruptions that come out in the course of the disease, and to prove very distressing. To allay it, small doses of camphor mixture may be frequently given. Where delirium or coma comes on, blisters will be proper. When a retrocession of the eruption takes place, the principal object will be to bring it out again, and keep up perspiration by means of powerful diaphoretics, as camphor, ammonia, frictions to the skin, external warmth, bathing the feet in warm water, &c. When any considerable evacuation ensues on a retrocession, we must be careful not to check it hastily. Should convulsions supervene thereon, musk and opium are strongly recommended.

[The use of purgatives is necessary throughout the continuance of the disease. They should be exhibited in such portions as to procure two or three consistent evacuations every day. Those mentioned in the treatment of intermittent fever are the best that can be selected for that purpose.]

To prevent this disease, a pure dry air, sufficient exercise, and wholesome food, are necessary. Pregnant women should guard against costiveness, and take daily as much exercise as they can bear, avoiding all green fruits, and other unwholesome things; and when in child-bed, they ought strictly to observe a cool regimen.

There is not any fever, in which the symptoms ought to be more carefully watched than in this. The changes are frequent and rapid, and the fever itself often assumes a quite different character. It is, therefore, of the utmost importance on such occasions, to change the regimen and medicines, and adapt them to the new symptoms.

PNEUMONIA.—INFLAMMATION OF THE LUNGS.

[A VARIETY of terms have been employed to designate inflammatory affections of the pulmonary organs, according to the seat of the inflammation, and the structure of the part involved. When the pleura is inflamed it is called *Pleurisy*; when the parenchyma or substance of the lungs is affected, the title is changed to *Peripneumonia*; and when there is an engorged or congested state of the lungs, the disease is termed *Peripneumonia Notha*, or *bastard pleurisy*. When, in addition to the pneumonic symptoms, there is great hepatic derangement, the disease is called *Bilious Pleurisy*; and a rheumatism of the intercostal or neighboring muscles, is termed *Pleurodyne* or spurious pleurisy. Such of these distinctions as are valuable in a practical point of view will be retained.] And, first, of

PLEURISY.—PLEURITIS.

TRUE pleurisy is an inflammation of the membrane called the *pleura*, which lines the inside of the breast. It is distinguished into the moist and dry. In the former the patient expectorates freely; in the latter, little or none at all. Pleurisy prevails, gene-

rally in winter and spring, among laboring people of a vigorous and plethoric habit of body, especially such as work without doors, and are of a sanguine constitution.

Causes.—Pleurisy may be occasioned by whatever obstructs perspiration, as exposure to cold winds; drinking cold fluids when the body is hot; sleeping on the damp ground; wet clothes; plunging the body into cold water; or exposing it to cold air when covered with perspiration. It may also be caused by the imprudent use of alcoholic liquors; violent exercise; blows on the breast; the stoppage of usual evacuations; or the recession of eruptions. Those who are accustomed to be bled at a certain season of the year, are apt, if they neglect it, to be seized with pleurisy.

Symptoms.—This, like most other fevers, generally begins with chilliness and shivering, which are followed by heat, thirst, and restlessness. To these succeeds a violent pricking pain in one of the sides among the ribs. Sometimes the pain extends towards the back-bone, sometimes towards the fore-part of the breast, and at other times, towards the shoulder blades. The pain is generally most violent when the patient draws his breath.

[The act of breathing is performed chiefly, if not altogether, by the action of the diaphragm and abdominal muscles, the motion of the ribs being restrained by the patient, on account of the increase of pain which it causes. Hence, the abdomen is in violent motion while the chest is quiescent. Attention to this circumstance alone, will always enable the observer to distinguish between pleurisy and inflammation of the bowels.]

Diet.—Nature generally endeavors to carry off this disease by a critical discharge of blood from some part of the body, by expectoration, sweat, loose stools, thick urine, or the like. We ought, therefore, to second her intentions by lessening the force of the circulation, relaxing the vessels, and promoting expectoration.

For these purposes, the diet, as in the former disease, ought to be cool, slender, and diluting. The patient must avoid all food that is viscid, hard of digestion, or that affords much nourishment; as flesh, butter, cheese, eggs, milk, and also every thing that is of a heating nature. His drink may be whey, or an infusion of pectoral and balsamic vegetables.*

Barley-water, with a little honey or jelly of currants, mixed with it, is likewise a very proper drink in this disease. It is made by boiling an ounce of pearl-barley in three pints of water to two,

* See Appendix. *Pectoral Infusion.*

which must afterwards be strained. These and other diluting liquors are not to be drank in large quantities at a time; but the patient ought to keep continually sipping them, so as to render his mouth and throat always moist. All his food and drink should be taken a little warm.

The patient should be kept quiet, cool, and every way easy, as directed under the foregoing disease. His feet and hands ought daily to be bathed in lukewarm water; and he may sometimes sit up in bed for a short space, in order to relieve his head.

Medicine.—Almost every person knows, when a fever is attended with a violent pain of the side, and a quick hard pulse, that bleeding is necessary. When these symptoms come on, the sooner this operation is performed the better; and the quantity at first must be pretty large, provided the patient be able to bear it. A large quantity of blood let at once in the beginning of a pleurisy, has a much better effect than repeated small bleedings. [It is customary to bleed until the patient can draw a long breath, and then close the orifice, but this practice is very inefficient, and renders subsequent bleedings necessary, while it endangers the patient by leaving the inflammation but partially checked. The only efficient and safe course, is to make the patient stand up on the floor, while blood is drawn from a large orifice in one or both arms, until he faints, or is about falling. By this method, no more blood will be drawn than is actually necessary to arrest inflammatory action.]

If, after the first bleeding, the pain, with the other violent symptoms, should still continue, it will be necessary, at the distance of twelve or eighteen hours, to take eight or nine ounces more. If the symptoms do not then abate, and the blood shows a strong buffy coat, a third or even a fourth bleeding may be requisite. If the pain of the side abate, the pulse become softer, or the patient begin to spit freely, bleeding ought not to be repeated.

Warm fomentations applied to the chest are often of great utility in this disease, in allaying pain and abating the local inflammation. They may be made by boiling a handful of flowers of elder, camomile, and common mallows, or any other soft vegetables, in a proper quantity of water. The herbs may be either put into a flannel bag, and applied warm to the side, or flannels may be dipped in the decoction, afterwards wrung out and applied to the part affected, with as much warmth as the patient can easily bear. As the cloths grow cool, they must be changed, and great care taken that the patient do not catch cold. A bladder may be filled with warm water, and applied to the side, if the above method of fomenting

be found inconvenient. Fomentations not only ease the pain, but relax the vessels, and prevent the stagnation of the blood and other humors. The side may likewise be frequently rubbed with a little of the volatile liniment.

Topical bleeding has often a very good effect in this disease. It may either be performed by applying a number of leeches to the part affected, or by cupping, which is both a more certain and expeditious method than the other.

I have often seen great benefit from young cabbage-leaves applied warm to the side in a pleurisy. These not only relax the parts, but likewise draw off a little moisture, and may prevent the necessity of blisters; which, however, when other things fail, must be applied.

[Among the most effective remedies in the treatment of pleurisy, may be ranked blisters. As soon as the firmness and activity of the pulse are reduced, a large blister should be applied over the part affected, and suffered to remain on until completely drawn; and if, after the blister ceases to discharge, pain still continues, another should be immediately drawn on the other side of the chest. It occasionally happens, about the fifth or sixth day of the disease, that great difficulty of breathing comes on, with a total suppression of expectoration. In such cases, a blister applied to the inside of each thigh will rarely fail to relieve all unpleasant or unfavorable symptoms. To prevent or relieve strangury from the blisters, the following emulsion may be used:

Take Mucilage of gum arabic, six ounces.
 Sweet spirits of nitre, two ounces.

Mix.—Give a table-spoonful every two or three hours.

In addition to this, the patient may drink freely of flaxseed-tea, or parsleyroot-tea; while warm fomentations are applied over the region of the bladder.

For the purpose of diminishing arterial action, and promoting expectoration, minute portions of tartar emetic may be exhibited with advantage. Care must be taken, however, that it does not produce vomiting; for experience abundantly testifies, that emetics, although valuable in the treatment of the bilious variety of pleurisy, are never beneficial in this form of the disease. Two grains of tartar emetic may be dissolved in eight table-spoonfuls of water, and a tea-spoonful of the solution given every hour.

Copious sweating induced about the time of the attack will often entirely put it off, or very considerably alleviate its violence. Of the diaphoretics employed in the early or forming stage of the com-

plaint, one of the best is the root of the *asclepias tuberosa*, or common pleurisy root. It excites perspiration, relieves the oppression of the chest, and promotes expectoration. (See *Materia Medica*.) A decoction of the seneka or rattle-snake root is highly spoken of by many practitioners, and by some it is looked upon as almost a specific in pleurisy; but they doubtless place too high an estimate on its virtues. After bleeding and other evacuations have been premised, the patient may take from two to four table-spoonfuls of the decoction, according as the stomach will bear it, three or four times a day. If it should occasion vomiting, two or three ounces of simple cinnamon water may be mixed with the quantity of decoction directed; or it may be taken in smaller doses.]

If the patient do not perspire, but has a burning heat upon his skin, and passes very little water, some small doses of purified nitre and camphor will be of use. Two drachms of the former may be rubbed with five or six grains of the latter in a mortar, and the whole divided into six doses, one of which may be taken every five or six hours, in a little of the patient's ordinary drink.

When the skin is very hot and dry, saline draughts, or a solution of acetated ammonia may be administered with advantage. To allay pain, ease the cough, stop diarrhœa, when it arises, or procure sleep, we may employ opium.

[One of the best formulæ for fulfilling these indications is the following:

Take	Solution of acetated ammonia, three drachms.
	Mint water, one ounce.
	Tincture of opium, twenty-five drops.
	Syrup of Tolu, two drachms.
	Antimonial wine, thirty drops.

Make a draught, and give it in two portions, one hour apart.

Although it is necessary to keep the bowels open in this disease, active purgation is uncalled for, and would seldom fail to prove prejudicial. Moderate doses of mild cathartics may be administered, as rhubarb, senna, castor oil, or the neutral salts, so as to keep up a soluble condition of the bowels.

It sometimes happens, after the violence of the disease has abated, that a tightness of the chest, a short cough, difficult expectoration, and some slight pain continue. In such cases, nothing is so certain to give speedy and permanent relief as a combination of ipecac., calomel, and opium. One grain of opium in union with two grains of calomel and half a grain of ipecac., may be given every three or four hours.]

When the pain and fever are gone, it will be proper, after the

patient has recovered sufficient strength, to give him some gentle purges, as those directed towards the end of an acute continual fever. He ought likewise to use a light diet of easy digestion, and his drink should be butter-milk, whey, and other things of a cleansing nature.

PERIPNEUMONIA NOTHA.—BASTARD PLEURISY.

[MUCH difference of opinion has prevailed with regard to the nature and treatment of this disease. It seems, however, to be altogether owing to the fact, that two diseases, differing in their nature, and requiring very opposite remedies, have been confounded under one general title. The first of these is known by the name of

Catarrhus Notha, or Suffocativus.—It commonly attacks persons advanced in life, or those of a feeble and delicate habit of body, and children. It is distinguished by the suddenness of its onset; with panting, laborious respiration; a weak and irregular pulse; and by the prodigious accumulation of mucus or phlegm, which the patient is unable to discharge. The surface is cold and damp, with little or no active pain in the chest.

The immediate cause of the disease is generally referred to extreme atony or debility of the pulmonary organs.

Treatment.—Moderate bleeding, if the system is not too much prostrated, is advisable; but the utmost caution is necessary under such circumstances, in the abstraction of blood; and the greatest care should be taken not to urge it to any considerable extent at any one time. If venesection is not admissible, or has been resorted to without avail, an emetic should be immediately administered. Considerable advantage is derived from active vomiting, as by means of it the mucus is expelled, and the congested state of the lungs is relieved. Either ipecacuanha or white vitriol should be selected for this purpose. Each of them is characterized by promptness, and other qualities peculiarly adapted to the case.

After the operation of the emetic, a blister, large enough to cover the surface of the chest, should be applied. Although it may not be adequate to relieve all the symptoms, it will rarely fail to induce a more comfortable state of things. It is one of the safest and most efficient modes of depletion that can be employed.

Contrary to the usual practice in pulmonary affections, opium may be employed in this case with advantage, after the evacuations above mentioned have been premised. It may either be

given alone, or in combination with squill, gum ammoniac, assa-fœtida, seneka snake root, or some other active expectorant.

The bowels should be kept open by such medicines as act very gently, and at the same time produce consistent discharges. Small doses of Cooke's pills, or Lee's pills, will answer this purpose very well. Where they cannot be obtained, rhubarb alone should be employed as often as the condition of the bowels require it. Active cathartics are always to be avoided; and, in many instances, warm corn-meal gruel will answer every purpose.

Peripneumonia Notha.—In this disease the lungs are completely engorged with blood. Indeed, the complaint is a pulmonary apoplexy, and should be treated accordingly. Like the last disease it comes on very suddenly, so much so, occasionally, as to exhibit no premonitory signs. It is most apt to attack persons who are debilitated by debauchery; though it often singles out the young, the robust, and the temperate. It is frequently the result of badly cured pleurisy.

It is known by impeded or interrupted respiration; a dry cough; quick pulse; a dull, heavy pain in the chest; a flushed, tumid countenance in the beginning; great anxiety and restlessness; a wild expression of the eyes; and, when the attack is peculiarly vehement, a total inability to change the position.

This disease is sometimes of an inflammatory character; but it is much more generally purely congestive. The practice, however, is the same in both cases, with perhaps this difference, that in the congestive form, more caution must be exercised in the use of direct depletory measures. In congestion, the veins are chiefly concerned, while the arterial system is principally implicated in inflammation. It is always the case, without exception, that the balance of the circulation is destroyed by accumulations of blood in the great veins of the lungs, liver, brain, and other organs; and, as a consequence of this, the surface is pallid, with more or less coldness of the extremities, the pulse is weak and impeded, with a feeling of oppression throughout the whole system, and extreme debility and prostration. But when the arteries are affected, the usual indications of inflammatory action are present—as a vigorous pulse, great heat and excitement, and perhaps uniformly some local pain or uneasiness. “In robust plethoric subjects, the febrile reaction in the early period of its course, is sometimes as vehement as in pleurisy.” “Unless the disease be promptly subdued, effusion into the bronchial cells will take place; the lips become purple; the face and extremities cold; the pulse small, laboring, and

obstructed; the breathing short and incomplete; and at last drowsiness, partial coma, and suffocation, close the scene." (Hastings.)

In some cases, the disease is attended with great derangement of the liver; in which considerable tenderness is felt in the right side, with nausea, bitter taste, vertigo, head-ache, and dark colored stools, or obstinate constipation. In almost every instance, severe pain is felt across the forehead, which is greatly increased by coughing.

Treatment.—In congestive cases, the pulse, and degree of excitement in the system, are not to be the guide to practice. Consulting these, the practitioner would be discouraged from employing the lancet perhaps at the very moment when it is imperiously demanded by the loaded and oppressed condition of the veins. But, though the remedy be required for the relief of the patient, under such circumstances, blood must be abstracted with caution. It will be prudent, therefore, to draw away only a small portion at a time, and then, suspending the stream, to watch the effect. If the system bears it well, and particularly if the pulse becomes freer and fuller, the blood may be allowed to flow anew, until a sufficient quantity is taken to accomplish the end in view. Not less blood should be evacuated than in congestion of the brain; in short, relief must be afforded before the orifice is closed. In many cases it will be preferable to bleed from the jugular vein rather than from the arm.

In cases of an inflammatory type, the lancet should be resorted to without delay, and used as directed in the treatment of true pleurisy. A sufficient quantity of blood ought to be taken away at the first bleeding, as a repetition will seldom be borne well. In infants, a decisive bleeding at the commencement, will go farther towards checking the disease, than all other remedies that can be employed.

Purgatives may be employed with advantage in the first stages of the disease, particularly in cases of congestion or when the liver is implicated. Mercurial cathartics are preferable; such as are recommended in the treatment of intermittent fever; and should be so managed as to keep up a regular action of the liver and bowels. In the inflammatory variety, the bowels should be kept loose by the exhibition of mild aperients, such as castor oil or syrup of rhubarb.

Emetics are particularly serviceable in cases of children; and may be occasionally used with advantage in adults. Wine of ipecac. is best suited to infants; or, a mixture of antimonial wine

and syrup of squills, where the cough is dry. From 15 to 20 drops of the former, with half a teaspoonful of the latter, may be given every twenty minutes until vomiting is produced. This ought to be repeated as often as the accumulation of mucus in the air passages renders breathing difficult. Half a teaspoonful of the wine of ipecac. may be given every ten or fifteen minutes, until the child vomits freely.

After blood has been drawn to a sufficient extent, a blister should be applied to the chest, and kept discharging by some irritating ointment, until convalescence is pretty far advanced. In the treatment of infants, cataplasms of mustard will generally afford speedy relief. They should be kept on until the skin is perfectly reddened, or blisters are produced.

As an auxiliary means, in either form of peripneumonia notha, inhalations of vapor into the lungs may be employed with benefit. The steam of warm water alone is useful; but its efficacy may be greatly increased by impregnating the vapor with something stimulating in its nature. An ounce of balsam of tolu may be added to half a pint of boiling water, and enclosed in a teapot, and the vapor inhaled through the spout. Holding a cup of ether to the mouth will often give relief. The fumes of common rosin may often be inhaled with benefit.

The more urgent symptoms being relieved by the preceding remedies, a combination of calomel, opium and ipecac., given every two or three hours, is an important remedy. It is particularly useful in the secondary stage of the disease, in persons advanced in years. It represses difficulty of respiration, promotes the discharge from the bronchia, and allays cough. One fourth of a grain of opium, one grain of ipecac. and five grains of calomel, may be given at a dose. If the gums become tender the calomel may be omitted.

In the early period of the disease, an infusion of slippery-elm bark, flaxseed-tea, or other mucilaginous mixtures, may be freely used; together with minute portions of tartar emetic. After the general arterial action has been subdued, expectorants of a more stimulating character may be resorted to; as seneka snake-root, camphor, or the carbonate of ammonia.

The temperature of the chamber in which the patient lies is a matter of much importance. It should be kept comfortably and uniformly warm. Variations of temperature are exceedingly apt to have a prejudicial effect.

Through the whole course of the disease, the antiphlogistic

regimen must be observed. In cases of great debility, after convalescence has commenced, weak infusions of columba or gentian may be given.]

PARAPHRENITIS.

THE *paraphrenitis*, or inflammation of the diaphragm, is so nearly connected with pleurisy, and resembles it so much in the manner of treatment, that is scarcely necessary to consider it as a separate disease.

It is attended with a very acute fever, and extreme pain in the part affected, which is generally augmented by coughing, sneezing, drawing in the breath, taking food, going to stool, making water, &c. Hence the patient breathes quick, and draws in his bowels to prevent the motion of the diaphragm; is restless, anxious, has a dry cough, hiccup, and often delirium. A convulsive laugh, or rather a kind of involuntary grin, is no uncommon symptom of this disease.

Every method must be taken to prevent suppuration, as it is impossible to save the patient's life when this happens. The regimen and medicine are in all respects the same as in pleurisy.

PERIPNEUMONY, OR INFLAMMATION OF THE LUNGS.

As this disease affects an organ which is absolutely necessary to life, it must always be attended with danger. Persons who abound with thick blood, whose fibres are tense and rigid, who feed upon gross aliment and drink strong viscid liquors, are most liable to peripneumony. It is generally fatal to those who have a flat breast, or narrow chest, and to such as are afflicted with asthma, especially in the decline of life. Sometimes the inflammation reaches to one lobe of the lungs only, at other times the whole of the organ is affected, in which case the disease can hardly fail to prove fatal.

Causes.—Inflammation of the lungs is sometimes a primary disease, and sometimes it is the consequence of other diseases. It proceeds from the same causes as the pleurisy.

Symptoms.—Most of the symptoms of a pleurisy likewise attend inflammation of the lungs; only in the latter the pulse is

more soft, and the pain less acute; but the difficulty of breathing, and oppression of the breast, are generally greater.

[In violent cases, tending to disorganization of the inflamed part, the countenance presents a livid appearance, and the veins of the neck become apparently very much enlarged. This disease may generally be easily distinguished from pleurisy. "In peripneumony, firm pressure on the abdomen with both hands, so as to push up the diaphragm against the lungs, almost invariably excites cough, great oppression, and a sense of suffocation; whereas, in pleurisy, no such effects result from abdominal pressure."]

Diet.—As the regimen and medicine are in all respects the same in true peripneumony as in pleurisy, we shall not here repeat them, but refer the reader to the treatment of that disease. It may not, however, be improper to add, that the aliment ought to be more slender and thin in this than in any other inflammatory disease. The learned Dr. Arbuthnot asserts, that even common whey is sufficient to support the patient, and that decoction of barley, and infusions of fennel-roots in warm water with milk, are the most proper both for drink and nourishment. He likewise recommends the steam of warm water taken in by the breath. If the patient have loose stools, but is not weakened by them, they are not to be stopped, but rather promoted by the use of emollient clysters.

When an inflammation of the breast does not yield to bleeding, blistering, and other evacuations, it commonly ends in suppuration, which is more or less dangerous, according to the part where it is situated. When this happens in the pleura, it sometimes breaks outwardly, and the matter is discharged by the wound.

When the suppuration happens within the substance or body of the lungs, the matter may be discharged by expectoration; but if the matter floats in the cavity of the breast, between the pleura and the lungs, it can only be discharged by an incision made betwixt the ribs.

If the patient's strength do not return after the inflammation is to all appearance removed; if his pulse continue quick though soft, his breathing difficult and oppressed; if he have cold shiverings at times, his cheeks flushed, his lips dry; and if he complain of thirst and want of appetite, there is reason to fear a suppuration, and that phthisis, or consumption of the lungs will ensue.

BILIOUS PLEURISY.

[This disease is most commonly met with in miasmatic districts, where intermittents have previously prevailed; and it often retains to a certain extent the intermittent type. It generally occurs in cold and variable seasons, and is not unfrequently of a most intractable and fatal character.

To all the symptoms of ordinary pleurisy, are added, in this case, most of those appertaining to the common autumnal bilious fever of our country. It is accompanied by considerable headache; redness of the eyes; tumid countenance; much gastric distress; a violent vomiting of bile; with a dark and furred tongue.

TREATMENT.—In addition to the superadded symptoms, this disease differs from the ordinary form of pleurisy, in being less actively inflammatory in character, and consequently in not bearing direct depletion to the same extent. As the disease usually presents itself, the system is often manifestly depressed by one or two bleedings. When this happens, the lancet must be laid aside. But, whenever the pulse will bear it, venesection should be resorted to, until the pleuritic symptoms are subdued.

Emetics and mercurial cathartics, are of the utmost importance in the treatment of bilious pleurisy. An emetic exhibited early in the disease, will often, in addition to cleansing the stomach, and relieving local determinations, allay the pain in the chest as by a charm. A single emetic will often perform a perfect cure.

Purgatives should be continued through the whole course of the disease, as directed in bilious fever.

For relieving the pain in the chest, after the pulse becomes soft, a blister should be applied of sufficient size to embrace the whole breast. In order to do good it must remain on long enough to draw well; and the discharge must be kept up as long as possible by the application of stimulating dressings. The benefit derived from it will be exactly in proportion to the amount of the discharge.

Dr. Chapman speaks in the highest terms of the efficacy of the seneka snake-root in this affection. He recommends it to be given in decoction after the depletory measures mentioned above, have been carried into effect. Copious draughts should be taken; the object being to excite and keep up profuse perspiration for ten or twelve hours.

The general principles applicable to the treatment of bilious fever and of pleurisy, are to control the treatment of this disease.]

PHTHISIS, OR PULMONARY CONSUMPTION. (*Phthisis pulmonalis.*)

A CONSUMPTION is a wasting or decay of the whole body, from an ulcer, tubercles, or concretion of the lungs, an empyema, a nervous atrophy, or cachexy.

Young persons, between the age of fifteen and thirty, of a slender make, long neck, high shoulders, and flat breasts, are most liable to this disease.

Consumptions prevail more in England than in any other part of the world, owing, perhaps, to the great use of animal food and malt liquors, the general application to sedentary employments, and the perpetual changes in the atmosphere, or variableness of the weather.

Causes.—It has already been observed, that an inflammation of the breast often ends in an imposthume : consequently whatever disposes people to this disease must likewise be considered as a cause of consumption.

Other diseases, by vitiating the habit, may likewise occasion consumptions : as scurvy, scrofula, or king's-evil, the venereal disease, asthma, small-pox, measles, &c.

As this disease is seldom cured, we shall endeavor the more particularly to point out its causes, in order that people may be enabled to avoid it. These are :

Confined or unwholesome air; when this fluid is impregnated with the fumes of metals or minerals, it proves extremely hurtful to the lungs, and often corrodes the tender vessels of that necessary organ.

Violent passions, exertions, or affections of the mind; as grief, disappointment, anxiety, or close application to the study of abstruse arts or sciences.

Great evacuations; as sweating, diarrhœas, diabetes, excessive venery, the fluor-albus, over-discharge of the menstrual flux, giving suck too long, &c.

The sudden stoppage of customary evacuations; as the bleeding piles, sweating of the feet, bleeding at the nose, the menses, issues, ulcers, or eruptions of any kind.

Injuries done to the lungs, calculi, &c. I lately saw the symptoms of a phthisis occasioned by a small bone sticking in the *bronchiæ*. It was afterwards vomited along with a considerable quantity of purulent matter, and the patient, by a proper regimen and the use of the Peruvian bark, recovered.

Making a sudden transition from hot to a very cold climate, change of apparel, or whatever greatly lessens the perspiration.

Frequent and excessive debaucheries. Late watching, and drinking strong liquors, which generally go together, can hardly fail to destroy the lungs. Hence the *bon companion* generally falls a sacrifice to this disease.

Infection. Consumptions are likewise caught by sleeping with the diseased; for which reason this should be carefully avoided. It cannot be of great benefit to the sick, and must hurt those in health.

Occupations in life. Those artificers who sit much, and are constantly leaning forward, or pressing upon the stomach and breast, as cutlers, tailors, shoemakers, and sempstresses, often die of consumptions. They likewise prove fatal to singers, and all who have occasion to make frequent and violent exertions of the lungs.

Cold. More consumptive patients date the beginning of their disorders from wet feet, damp beds, night air, wet clothes, or catching cold after the body has been heated, than from all other causes.

We shall only add, that this disease is often owing to an hereditary taint, or a scrofulous habit; in which case it is generally incurable.

Symptoms.—This disease generally begins with a dry cough, which often continues for some months. If a disposition to vomit after eating be excited by it, there is still greater reason to fear an approaching consumption. The patient complains of a more than usual degree of heat, a pain and oppression of the breast, especially after motion; his spittle is of a saltish taste, and sometimes mixed with blood. He is apt to be sad; his appetite is bad, and his thirst great. There is generally a quick, soft, small pulse; though sometimes the pulse is pretty full, and rather hard. These are the common symptoms of a beginning consumption.

Afterwards the patient begins to spit a greenish white, or bloody matter. His body is extenuated by the hectic fever and colliquative sweats, which mutually succeed one another, viz. the one towards night, and the other in the morning. A looseness, and an excessive discharge of urine, are often troublesome symptoms at this time, and greatly weaken the patient. There is a burning heat in the palms of the hands, and the face generally flushes after eating; the fingers become remarkably small, the nails are bent inwards, and the hairs fall off.

At last the swelling of the feet and legs, the total loss of strength,

the sinking of the eyes, the difficulty of swallowing, and the coldness of the extremities, show the immediate approach of death, which, however, the patient seldom believes to be so near. Such is the usual progress of this fatal disease, which, if not early checked, commonly sets all medicine at defiance.

Regimen.—On the first appearance of consumption, if the patient live in a large town, or any place where the air is confined, he ought immediately to quit it, and to make choice of a situation in the country, where the air is pure and free. Here he must not remain inactive, but take every day as much exercise as he can bear.

The best method of taking exercise is to ride on horseback, as this gives the body a great deal of motion without much fatigue. Such as cannot bear this kind of exercise, must make use of a carriage. A long journey, as it amuses the mind by a continual change of objects, is greatly preferable to riding the same ground over and over. Care, however, must be taken to avoid catching cold from wet clothes, damp beds, or the like. The patient ought always to finish his ride in the morning, or at least before dinner; otherwise it will oftener do harm than good.

It is pity those who attend the sick seldom recommend riding in this disease, till the patient is either unable to bear it, or the malady has become incurable. Patients are likewise apt to trifle with every thing that is in their own power. They cannot see how one of the common actions of life should prove a remedy in an obstinate disease, and therefore they reject it, while they greedily hunt after relief from medicine, merely because they do not understand it.

Those who have strength and courage to undertake a pretty long voyage, may expect great advantage from it. This to my knowledge has frequently cured a consumption after the patient was, to all appearance, far advanced in that disease, and where medicine had proved ineffectual. Hence it is reasonable to conclude, that if a voyage were undertaken in due time, it would seldom fail to perform a cure.*

Such as try this method of cure ought to carry as much fresh

* Two things chiefly operate to prevent the benefits which would arise from sailing. The one is, that physicians seldom order it till the disease is too far advanced; and the other is, that they seldom order a voyage of a sufficient length. A patient may receive no benefit by crossing the channel, who, should he cross the Atlantic, might be completely cured. Indeed we have reason to believe, that a voyage of this kind, if taken in due time, would seldom fail to cure a consumption.

provisions along with them as will serve for the whole time they are at sea. As milk is not easily obtained in this situation, they ought to live upon fruits, and the broth of chickens, or other young animals which can be kept alive on board. It is scarcely necessary to add, that such voyages should be undertaken, if possible, in the mildest season, and that they ought to be towards a warmer climate.*

[The island of Cuba, and the capes of Florida, particularly the region around St. Augustine, are resorted to by consumptive individuals during the fall and winter months, with much advantage. The southern parts of France, Spain, and Portugal, and some parts of Italy, are also highly recommended to such invalids. It is only in the beginning, however, that climate can exercise much influence over the disease. In the latter stages, a mild, salubrious, and uniform atmosphere will considerably mitigate it, and prolong the patient's life; but little expectation of a cure need be entertained.]

Wearing flannel next the skin is indispensably necessary in all cases. A flannel shirt and drawers should be worn constantly, and changed every day or two, in order to prevent the accumulation of the matter of perspiration on the skin.]

Those who have not courage for a long voyage may travel into a more southern climate; and if they find the air of these countries agree with them, they should continue there at least till their health be confirmed.

Next to proper air and exercise, we would recommend a due attention to diet. The patient should eat nothing that is either heating or hard of digestion, and his drink must be of a soft and cooling nature. For this purpose he must keep chiefly to the use of vegetables and milk. Milk alone is of more value in this disease than the whole *materia medica*.

Asses' milk is commonly reckoned preferable to any other; but it cannot always be obtained; besides, it is generally taken in a very small quantity; whereas, to produce any effects, it ought to make a considerable part of the patient's diet. It is hardly to be expected, that a gill or two of asses' milk, drank in the space of twenty-four hours, should be able to produce any considerable change in the humors of an adult; and when people do not perceive its effects soon, they lose hope, and so leave it off. Hence

* Though I do not remember to have seen one instance of a genuine consumption of the lungs cured by medicine, yet I have known a West-India voyage work wonders in that dreadful disorder.

it happens, that this medicine, however valuable, very seldom performs a cure. The reason is obvious; it is commonly used too late, is taken in too small quantities, and is not duly persisted in.

I have known very extraordinary effects from asses' milk in obstinate coughs, which threatened a consumption of the lungs; and do verily believe, if used at this period, that it would seldom fail; but if it be delayed till an ulcer is formed, which is generally the case, how can it be expected to succeed?

Asses' milk ought to be drank, if possible, in its natural warmth, and, by a grown person, in the quantity of half a pint at a time. Instead of taking this quantity night and morning only, the patient ought to take it four times, or at least thrice a-day, and to eat a little light bread along with it, so as to make it a kind of meal.

If the milk should happen to purge, it may be mixed with old conserve of roses. Asses' milk is usually ordered to be drank warm in bed; but as it generally throws the patient into a sweat when taken in this way, it would perhaps be better to give it after he rises.

Some extraordinary cures in consumptive cases have been performed by women's milk. Could this be obtained in sufficient quantity, we would recommend it in preference to any other. It is better if the patient can suck it from the breast, than to drink it afterwards. I knew a man who was reduced to such a degree of weakness in a consumption, as not to be able to turn himself in bed. His wife was at that time giving suck, and the child happening to die, he sucked her breasts, not with a view to reap any advantage from the milk, but to make her easy. Finding himself, however, greatly benefited by it, he continued to suck her till he became perfectly well, and is at present a strong and healthy man.

Some prefer butter-milk to any other, and it is indeed a very valuable medicine, if the stomach be able to bear it. It does not agree with every person at first; and is, therefore, often laid aside without a sufficient trial. It should at first be taken sparingly, and the quantity gradually increased, until it comes to be almost the sole food. I never knew it succeed, unless where the patient almost lived upon it.

Cows' milk is most readily obtained of any, and though it be not so easily digested as that of asses or mares, it may be rendered lighter, by adding it to an equal quantity of barley-water, or allowing it to stand for some hours, and afterwards taking off the cream. If it should, notwithstanding, prove heavy on the stomach,

a small quantity of water, with a little sugar, may be added, which will render it both more light and nourishing.*

It is not to be wondered, that milk should for some time disagree with a stomach that has not been accustomed to digest any thing but flesh and strong liquors, which is the case with many of those who fall into consumptions. We do not, however, advise those who have been accustomed to animal food and strong liquors, to leave them off all at once. This might be dangerous. It will be necessary for such to eat a little once a-day of the flesh of some young animal, or rather to use the broth made of chickens, veal, lamb, or such like. They ought likewise to drink a little wine made into negus, or diluted with twice or thrice its quantity of water, and to make it gradually weaker till they can leave it off altogether.

These must be used only as preparatives to a diet consisting chiefly of milk and vegetables, which the sooner the patient can be brought to bear, the better. Rice and milk, or barley and milk, boiled with a little sugar, is very proper food.

Wholesome air, proper exercise, and a diet consisting chiefly of vegetables, with milk, is the only course that can be depended on in a beginning consumption. If the patient has strength and sufficient resolution to persist in this course, he will seldom be disappointed of a cure.

In a populous town of England,† where consumptions are very common, I have frequently seen consumptive patients, who had been sent to the country with orders to ride and live upon milk and vegetables, return in a few months quite plump, and free from any complaint. This indeed was not always the case, especially when the disease was hereditary, or far advanced; but it was the only method in which success was to be expected; where it failed, I never knew medicine succeed.

[The Carrageen, or Irish moss, is an excellent article of diet in all affections of the lungs. It is prepared in the following manner: Take two drachms of the moss and steep it in cold water two or three minutes; take it out, shake the water off, and boil it in a pint of new milk until it becomes of the consistence of warm jelly; then strain it, sweeten it with loaf sugar, and let it cool for use. While it is boiling, any spice which the patient may prefer, may

* In Russia, it is common for consumptive persons to migrate into Tartary, where, by living wholly on a fermented preparation of mares' milk, termed *koumiss*, they very generally recover even from the last stages of this disease.

† Sheffield.

be added to it, as mace, cloves, orange or lemon peel, or cinnamon. This article contains a great deal of nutriment in a small bulk, and is entirely devoid of any stimulating or irritating qualities. It will be perfectly digested when the stomach is incapable of managing any other diet.]•

All the food and drink ought, however, to be taken in small quantities, lest an overcharge of fresh chyle should oppress the lungs, and too much accelerate the circulation of the blood.

The patient's mind ought to be kept as easy and cheerful as possible. Consumptions are often occasioned, and always aggravated, by a melancholy cast of mind; for which reason, music, cheerful company, and every thing that inspires mirth, are highly beneficial. The patient ought seldom to be left alone, as brooding over his calamities is sure to make him worse.

Medicine.—Though the cure of this disease depends chiefly upon regimen and the patient's own endeavors, yet we shall mention a few things which may be of service in relieving some of the more violent symptoms.

In the first stage of consumption, the cough may sometimes be appeased by local and general purging and bleeding, which may be occasionally repeated; and the expectoration may be promoted by the following medicines; take fresh squills, gum ammoniac, and powdered cardamon seeds, of each a quarter of an ounce; beat them together in a mortar, and if the mass prove too hard for pills, a little of any kind of syrup may be added to it. This may be formed into pills of a moderate size, and four or five of them taken twice or thrice a-day, according as the patient's stomach will bear them.

The mixture of *ammoniacum*, or milk of gum ammoniac, as it is called, is likewise a proper medicine in this stage of the disease.

A mixture made of equal parts of lemon-juice, fine honey, and syrup of poppies, may likewise be used. Four ounces of each of these may be simmered together in a sauce-pan, over a gentle fire, and a table-spoonful of it taken at any time when the cough is troublesome.

It is common in this stage of the disease to load the patient's stomach with oily and balsamic medicines. These, instead of removing the cause of the disease, tend rather to increase it by heating the blood, while they pall the appetite, relax the solids, and prove every way hurtful to the patient.

Acids seem to have peculiarly good effects in this disease; they both tend to quench the patient's thirst and to cool the blood.

The vegetable acids, as apples, oranges, and lemons, appear to be the most proper. I have known patients suck the juice of several lemons every day with manifest advantage, and would for this reason recommend acid vegetables to be taken in as great quantity as the stomach will bear them.

During the first or inflammatory stage of the complaint, it will be advisable, in conformity with the antiphlogistic plan, to employ gentle laxatives, should the bowels be costive, with occasional gentle emetics. When there is any febrile heat, with cough or pain in the chest, diaphoretics may be given, such as a small dose (one eighth of a grain) of tartarized antimony, or the powder of antimony, two or three times a-day.

For the patient's drink, we would recommend demulcent drinks; infusions of the bitter plants, as ground-ivy, the lesser centaury, camomile flowers, or water trefoil. These infusions may be drank at pleasure. They strengthen the stomach, promote digestion, and at the same time answer all the purposes of dilution, and quench thirst much better than things that are luscious and sweet. But if the patient spit blood, he ought to use, for his ordinary drink, infusions or decoctions of the vulnerary roots and plants.

There are many other mucilaginous plants and seeds, of a healing and agglutinating nature, from which decoctions or infusions may be prepared with the same intention; as the orches, the quince-seed, coltsfoot, linseed, sarsaparilla, &c. It is not necessary to mention the different ways in which these may be prepared. Simple infusion or boiling is all that is necessary, and the dose may be at discretion.

The confection of roses is here peculiarly proper. It may either be put into the decoction above prescribed, or eaten by itself. No benefit is to be expected from trifling doses of this medicine. I never knew it of any service, unless when three or four ounces at least were used daily for a considerable time. In this way I have seen it produce very happy effects, and would recommend it wherever there is a discharge of blood from the lungs.

When it is evident that there are vomicae or tubercles in the lungs, and the matter can neither be spit up nor carried off by absorption, the patient must endeavor to make it break inwardly, by drawing in the steams of warm water or vinegar with his breath. When it happens to burst within the lungs, the matter may be discharged by the mouth. Sometimes, indeed, the bursting of the vomicae occasions immediate death, by suffocating the patient. When the quantity of matter is great, and the patient's

strength exhausted, this is commonly the case. If the matter discharged be thick, and the cough and breathing become easier, there may be some hopes of a cure. The diet at this time ought to be light, but restorative, as chicken broths, sago gruel, or rice-milk; the drink, butter-milk or whey, sweetened with honey.

In the second, or tuberculated stage of the disease, the employment of emetics might be regularly persisted in every second or third morning; the sulphate of zinc is preferred; and the sulphate of copper is recommended by Senter, in the transactions of the college of Philadelphia, and by Adair, in the medical commentaries, in doses from seven to ten grains each, made into pills.

As detergents, balsamics of different kinds have been much used in the ulcerated stage. Balsam of Copaiva, in the dose of twenty to thirty drops, twice or thrice a day, may be tried. Myrrh, however, is the medicine employed with the greatest success in those cases of hectic fever which are unattended by any great degree of heat or thirst, and which do not show manifest signs of inflammation. The preparation used by the late Dr. Moses Griffiths seems to be preferable to all others:

Take	Myrrh, one drachm.
	Dissolve in a mortar with
	Spirit of pimento, six drachms.
	Distilled water, six and a half drachms.
Then add,	Subcarbonate of potash, half a drachm.
	Sulphate of iron, twelve grains.
	Syrup, two drachms.

Mix, and divide into four draughts, one of which is to be taken every morning, another at five in the evening, and another at bed time.

If at any time it should be thought too heating, the spirituous water may be omitted, as the solution may be made without it; although it is doubted whether it will agree so well with the stomach in general.

[Recently, Dr. Cooper has published an article, in which he states, that he has not lost a patient in pulmonary consumption for the last twelve years, although he has treated a great number of cases within that period of time. His treatment consists in the administration of frequent doses of gum ammoniacum and sulphate of copper in combination. Four or five grains of the ammoniacum with the fourth of a grain of the sulphate of copper may be administered every three or four hours. Strict attention to diet is necessary during the progress of the cure.]

If the vomicae or tubercles should discharge themselves into the cavity of the breast, between the pleura and the lungs, there is no

way of getting the matter out, but by an incision, as has already been observed. As this operation must always be performed by a surgeon, it is not necessary here to describe it. We shall only add, that it is not so dreadful as people are apt to imagine, and that it is the only chance the patient in this case has for his life.

With regard to the remedies usually employed in the treatment of phthisis, Dr. Ferrier has observed that the digitalis (fox-glove,) with the sulphate of iron, myrrh, bark, and other tonics, may be most proper in those cases of consumption which arise from scrofula; while the digitalis with opium, mucilaginous medicines, and diuretics, may be opposed to the florid consumption.

Dr. Crichton, of Petersburg, in the tuberculous or true scrofulous phthisis, has seen much benefit derived from the use of the tar fumigations.

It would serve little purpose here to recapitulate the many articles recommended by various practitioners in the treatment of pulmonary consumptions, such as fixed airs, Prussic acid, conium, foxglove, uva ursi, &c. It does not follow that any of them have any decided influence over the disease, and are more embarrassing to the practitioner than beneficial to the patient. If confirmed phthisis were to be cured, it must be effected principally, if not solely, by dietetic means and change of climate.

[A perpetual blister to the chest, or pustulation with tartar emetic ointment, together with a very spare diet, and bleeding whenever the pulse would bear it, and confinement in an equable atmosphere, have entirely cured pulmonary consumption when the disease was far advanced. This course has been very successful in the hands of several eminent physicians in this country, and offers, perhaps, as fair a prospect of success as any treatment that has been devised. Issues or setons may be substituted for the blisters in some cases.]

A Nervous Consumption, or Atrophy, is a wasting or decay of the whole body, without any considerable degree of fever, cough, or difficulty of breathing. It is attended with indigestion, weakness, want of appetite, &c.

Those who are of a fretful temper, who indulge in spirituous liquors, or who breathe an unwholesome air, are most liable to this disease.

We would chiefly recommend, for the cure of a nervous consumption, a light and nourishing diet, plenty of exercise in a free open air, and the use of such bitters as brace and strengthen the stomach; as the Peruvian bark, gentian-root, camomile, and hore-

hound. These may be infused in water or wine, and a glass of it drank frequently.

It will greatly assist the digestion, and promote the cure of this disease, to take, twice a-day, twenty or thirty drops of the elixir of vitriol in a glass of wine or water. The chalybeate wine is likewise an excellent medicine in this case; it strengthens the solids, and powerfully assists Nature in the preparation of good blood.

Agreeable amusements, cheerful company, and riding about, are, however, preferable to all medicines in this disease. For which reason, when the patient can afford it, we would recommend a long journey of pleasure, as the most likely means to restore his health.

What is called a *symptomatic consumption*, cannot be cured without first removing the disease by which it is occasioned. Thus when a consumption proceeds from the scrofula or king's evil, from the scurvy, the asthma, or the venereal disease, due attention must be paid to the malady from whence it arises, and the regimen and medicine directed accordingly.

When *excessive evacuations* of any kind occasion consumption, they must not only be restrained, but the patient's strength must be restored by gentle exercise, nourishing diet, and generous cordials. Young and delicate mothers often fall into consumption, by giving suck too long. As soon as they perceive their strength and appetite begin to fail, they ought immediately to wean the child, or provide another nurse, otherwise they cannot expect a cure.

Before we quit this subject, we would earnestly recommend it to all, as they wish to avoid consumptions, to take as much exercise without doors as they can, to avoid unwholesome air, and to study sobriety. Consumptions owe their present increase not a little to the fashion of sitting up late, eating hot suppers, and spending every evening over a bowl of punch, or other strong liquors. These liquors, when too freely used, not only hurt the digestion, and spoil the appetite, but set the whole constitution on fire.

In tracing the various causes of consumption, I entered into minute details, to put people more upon their guard, as the disease, when deeply seated, seldom admits of a cure. Not but there are plenty of persons who confidently undertake to perform cures in the most hopeless stages of the complaint, though physicians have not been so happy as to find out the art. Perhaps the only art which the others have discovered, or which they have ever studied, is the art of impudence and deception.

But to return to my former argument: as consumptions seldom

admit of a cure, the utmost care should be exerted to avoid them. The best general caution I can give is to guard against catching cold, the fruitful mother of consumptions, and of many other disorders. How this is to be done, will be more fully explained when I come to treat of colds and coughs, the source of numberless diseases, especially among the young, gay, and thoughtless part of the community, who have no fear of any ill until it overtakes them, when it is generally too late to prevent the fatal consequences.

On the means of preventing Pulmonary Consumption.—Human beings are so constituted that they can exist but for a short space of time without inhaling a fresh portion of atmospheric air. The uninterrupted repetition of this process, which is absolutely requisite for the support of life, implies a perpetual state of activity in the organs by means of which it is carried on. This alternate state of dilatation and contraction of the lungs necessarily forms a great impediment to the cure of any wound or ulceration taking place in their substance, by the same process employed by nature to heal injuries in other parts of the living body, which admit of a temporary state of quietude and repose. The slightest degree of diseased action occurring in an organ so essentially important to the maintenance of existence, is sufficient to create alarm, which our melancholy experience of the inefficacy of the art of medicine to remove chronic affections of the organs of respiration has no tendency to diminish. A single opportunity of inspecting the state of the lungs of a person dead of pulmonary consumption, might, I have frequently thought, suffice to correct the pretensions of those who propose to cure the disease after it is confirmed, by the administration of medicine. But the impracticability of a cure ought to render us proportionably more attentive to the means of prevention, from which much may be expected, provided they are employed at a sufficiently early period.

Pulmonary consumption may be divided into two kinds, which it is of importance, even in a prophylactic point of view, to discriminate from each other.—The lungs may be injured by a blow, or pierced by a wound. Inflammation may take place in them from over-exertion, in consequence of the stoppage of some customary evacuation, or from exposure to cold, giving rise to pleurisy or peripneumony; and these diseases may terminate in consumption in persons who have no natural predisposition to that complaint. This species of the disease may be termed symptoma-

tic, and occasionally admits of being cured, by removing the cause from whence it originated. Sometimes, when an abscess is formed in the lungs, which is termed a vomica, and produces all the symptoms of phthisis, it will at length either break internally, when the matter is coughed up, or point externally, and admit of being opened; and, after its contents are evacuated. it will heal up, and the patient completely recover.

The other species of consumption may be denominated hereditary, as being derived either from a parent, or occasionally from some more distant relative. As we perceive children to resemble their parents in the features of their face, and in the disposition of their minds, so there can be no doubt but they also resemble them in the internal organization of the body, on the peculiar structure of which a predisposition to future disease must necessarily depend; and that children are, in fact, liable to the diseases of their parents, we have manifold and decisive proofs. How frequently do we see a person, at a certain time of life, so much resemble what a father was at the same period, that he seems to fill the identical place in society that the former occupied. In like manner, at certain periods of life, do children become liable to the diseases of their parents, and consumption, gout, or dropsy makes its appearance, the germs of which must have lain in the system from the earliest period of existence, although they did not disclose themselves till their due season. Not only do we see that children are peculiarly prone to the diseases of that parent to whom they bear the greatest personal similarity, but as we occasionally perceive the resemblance of some more remote ancestor break forth, as it were, in a family, so we shall find the constitution and diseases of that child differ from those of its immediate parents, and partake rather of the nature of the progenitor whom it most resembles.

These circumstances are thus particularly noted, because it is only in cases where the predisposition to this disease is suspected at a very early period of life, that the means of prevention can be employed with any reasonable prospect of success. For the same reason, also, I am desirous of attracting the attention to a point of similarity between parents and children which has not hitherto been sufficiently attended to. The form and structure of the nails of both extremities afford an excellent criterion to enable us to judge which of the parents the offspring most resembles in constitution. I have known the peculiar structure of a toe-nail designate certain individuals of a family for several successive genera-

tions. Although these parts of the human body do not make their appearance earlier than about the sixth month of the fœtal age, they indicate very decidedly the predominant influence of the parent whom the child most resembles in constitution. It is also a curious fact that the horns of animals, which often do not appear till several months after birth, afford the best criterion for distinguishing the peculiar breed or race, to those who are conversant with such subjects.

But certain peculiarities in the structure of the nails afford also a strong indication of the propensity to phthisis. In forming an opinion concerning the probable future occurrence of this disease, the nails ought always to be carefully examined, and compared with those of the parents. If these parts of the body are large, of an oblong shape, of a smooth texture, and a pink color, curling over the tips of the fingers, the last joint of which is commonly somewhat enlarged, there is much reason to suspect a phthisical tendency. If, moreover, we find a slender conformation of the body, fine skin and hair, a shrill voice easily rendered hoarse, hollowness of the temples, sound teeth, and an expanded pupil of the eye, there is little doubt but a person so constituted will, at some future period of life, become the victim of pulmonary consumption.

The aggregate of these appearances constitute what is termed delicacy of constitution. This habit of body is frequently accompanied by superior powers of mind. Individuals, indeed, who seem almost to approach the perfection of our species, are peculiarly marked as the victims of pulmonary consumptions. This fact not only furnishes a strong motive for endeavoring to prevent the first attack of affections of the lungs, but affords also some grounds to encourage the expectation of success. Soundness of teeth, a marked concomitant of the phthisical habit, is commonly considered as one of the surest signs of a sound constitution. A variety of examples might also be adduced of persons who, after having subdued, by regimen and medicine, phthisical symptoms with which they were threatened in their youth, have protracted existence to a very advanced period of life. As the propensity to this disease must necessarily be the result of a certain combination of habits, continued, perhaps, from one generation to another, combined with the peculiar circumstances in which the individual is placed, it is reasonable to suppose that, by altering the former, and counteracting the latter, the general constitution might be changed.

Pulmonary consumption is a disease almost peculiar to a certain zone of northern latitude, in which the British Isles are included. A little farther to the north, or to the south, the ravages of these complaints are comparatively trifling. The only natural cause to which this can with propriety be attributed, is the fluctuation of our atmospheric temperature between the confines of heat and cold. The increased frequency of pulmonic complaints, which has accompanied the more general diffusion of wealth, and consequent habits of luxurious living in this country, affords, I think, sufficient proof that tender and indulgent treatment is not the best means of obviating them. What are the classes of mankind most susceptible of, and most injured by the impressions of heat and cold? Precisely those who are least exposed to their influence. Sedentary artificers, who necessarily pass their days in close and heated chambers, are swept off in unaccountable numbers by pulmonary consumption; while sailors, ploughmen, butchers, and all persons whose occupations lead them to be much in the open air, enjoy a comparative immunity from the attack of this disease. Among the native inhabitants of America, Doctor Rush informs us, that pulmonary consumption is unknown; but in proportion as they adopt the arts and manners of civilized life, do they become liable to the fatal influence of this complaint.

When a wealthy parent sees a delicate child shiver at the freshness of the breeze, a natural tenderness leads him to avert this unpleasant feeling by the means he can most readily command, close apartments and warm clothing. But he thus augments that very delicacy of constitution he should endeavor to counteract. The variations of atmospheric temperature are most sensibly felt by those who are cased in the thickest clothing; as plants reared in the hot-house are least able to bear the blasts of winter. Contrast the leaden-colored visage, and the chilblain toes and fingers of the puny school-boy, shivering and crawling along the street in a winter's day, with the appearance of the country lad of equal years employed all day in following the plough; the surface of his body, in place of being chilled by the cold, is roused to a state of increased vascular action, his countenance glows with the genuine hue of health, and his whole frame bespeaks elasticity and vigor.

Surely from this example we might be taught the most effectual method of averting delicacy of constitution, being careful to modify the means according to the object we have to operate upon. Let the child whose wealth can command, and whose future existence is of sufficient importance to justify such attention, reside in

a part of the country where the soil is chalk or limestone, and the air pure. Let him be abroad all day, and during every kind of weather, provided he is employed in active exercise; let him be guarded against suddenly approaching, or sitting much over the fire, even in winter. Let the habit of retiring early to bed, and leaving it early in the morning be strictly enforced. Let him wear no more clothes than are requisite to guard against cold, and plunge into the sea, or a river, for a moment, daily, during the three warmest months of summer. The phthisical habit is, in general, attended by a precocity of intellect, which it is of more importance to check than to encourage. In such instances the improvement of the mind should be considered as a secondary object, and may well be postponed till a certain share of robustness of constitution has been ensured. This kind of corporeal education is obviously incompatible with the usual discipline of schools, whether private or public, and can only be advisable where the importance of the object justifies the various sacrifices that must be made in order to attain it.

I very recently had occasion to see the success of this plan completely exemplified. Every possible attention was paid to the health of a delicate child by its anxious parents. He lived in spacious apartments in an open and airy part of London; was carried abroad several times every day when it did not rain: and the diet was regulated with every attention to propriety. Notwithstanding all this care the flesh of the child was flabby, he was averse to exercise, the belly became prominent, and the glands on each side of the neck were very considerably enlarged. In this state the child was removed the beginning of last summer to a dry and healthy situation in the neighborhood of the sea. There it ran about and bathed along with other children of a similar age. No particular attention was paid to dress or diet. In the course of a few months the tumid abdomen subsided, the swellings of the neck disappeared, the flesh became firm, and this child, whose life had been despaired of, and was sent from home as on a forlorn hope, returned vigorous, active and healthy.

But precautions against this insidious disease are rarely had recourse to at so early a period of life. The buoyant spirits and active propensities of its destined victims rarely excite suspicion either in themselves or their friends of the approaching mischief. As the age of puberty approaches, other indications of the propensity to phthisis are developed. The narrow and elongated form of the chest becomes more apparent, and is chiefly indicated

by the prominence of the shoulders, which stand out from it on each side somewhat like wings. A broad deep chest, the transverse section of which approaches the circle, affords the best criterion of a healthy and vigorous conformation of the body, not only in man, but in all kinds of quadrupeds which are subservient to his wants. For the support of life it is necessary that nearly one-half of the blood should circulate through the lungs in the same time that the remainder passes through the rest of the body. But if the lungs are prevented from expanding to their proper magnitude in consequence of being confined within the limits of a narrow thorax, their proper blood-vessels must be proportionally diminished in number as well as dimensions, and on any sudden push of blood, their coats, already over-distended, must be prone to rupture. At this period of life, too, there is evidently an effort of the constitution endeavoring to expand every part to a state of full perfection. This is evinced by frequent discharges of blood from the nose. The vessels of that part readily heal, but an accident of the same kind taking place in the lungs, not unfrequently lays the foundation of consumption.

This temporary fulness of blood should be counteracted, by strictly adhering to a diet of the farinacea and ripe fruits. Animal food and fermented liquors ought to be rigidly prohibited. Even milk often proves too nutritious. Exercise should be regular but gentle. Sudden and violent exertions are extremely hazardous. Riding on horseback is preferable to any other kind of exercise. Such efforts of the voice as are required in singing or playing on any wind-instrument of music, frequently produce discharges of blood from the lungs; but the practice of reading or reciting for some time together in a moderate tone of voice, tends to strengthen these organs, and to diminish the danger of pulmonary hemorrhage from any sudden exertion.

During the circulation of the blood through the lungs, a principle necessary to the support of life is absorbed from the air; and various matters, the longer continuance of which in the body would prove noxious, are also discharged in the form of vapor or gas. That there is, besides, no inconsiderable quantity of aqueous fluid secreted and discharged from the lungs, every person must be convinced, who has attended to the deposition of watery particles that takes place from the breath in a frosty day. Of the whole quantity of perspirable matter discharged from the surface of the body in any given portion of time, that exhaled from the surface of the lungs may be estimated as amounting to one-third. The

skin and the lungs being both secreting surfaces, must also be considered as organs mutually compensating or balancing each other. If the skin be suddenly chilled, a larger share of perspirable matter will endeavor to escape by the lungs, as being an internal, and therefore a warmer surface. It is not surprising that this effort should in a delicate organ be productive of derangement and disease, and accordingly we daily hear people dating their first attack of pulmonary complaints from sitting in a cold place after having been over-heated, from being thoroughly soaked with rain, or from cold-bathing in an improper state of the system.

The purpose of these observations is to enforce the propriety of maintaining cutaneous perspiration, and endeavoring to render the surface of the body less susceptible of atmospheric variations. In persons of a phthisical habit the skin is in general either dry and scabrous, or clammy, both of which conditions betoken deficient perspiration. The most effectual means of removing this morbid state of the surface of the body is the sedulous use of cutaneous friction. Why a practice, on which the ancient physicians placed so much dependence not only for the cure of many diseases, but in a pre-eminent manner for the preservation of health, should have in modern times fallen so completely into neglect, it is not perhaps easy to account; although at present nothing seems to be considered as medicine except what is taken into the stomach; as if the due regulation of air and exercise did not furnish means of recovery, at least as efficacious as drugs.

Cutaneous friction is most advantageously performed by means of a flesh-brush. To be of any essential use, this instrument ought to be of a much harder texture than those commonly offered for sale. The most favorable season for this practice is not immediately on getting out of bed. There exists a sensibility of the skin at that time which renders the application of the brush painful and unpleasant. After the customary diurnal evacuations of the bowels has taken place, the person should strip, and applying this instrument to various parts of the body in succession, commencing with the chest, continue the friction till an universal redness and glow takes place over the whole surface of the body. The temporary exposure of the naked body to the air of the chamber during this operation, accustoms the skin to a certain variety of temperature, while any danger of taking cold is completely obviated by the exercise, as a person ought always, if his strength permit, to rub himself. Though somewhat painful and irksome at first, this operation, like all the rest of our active habits, gradually

becomes pleasant, and at length necessary, so that a person accustomed to it feels himself uncomfortable if he has omitted for a day his usual exercise.

From regularly persevering for some length of time in this practice I have observed a very obvious alteration produced in the texture of the skin. It appears to acquire thickness, and to become mellow and pliable, a condition very different from that of persons disposed to phthisis, whose skin is commonly thin and harsh. The muscles also seem to derive firmness from this practice. The brush will also be found daily to remove no small quantity of furfuraceous matter, which, whether it be inspissated perspiration adhering to the surface, or particles of decaying cuticle, is certainly better away. This practice also removes every kind of roughness and asperity from the surface of the skin, which becomes beautifully smooth and polished, so that even as a cosmetic, having no tendency to impair health, cutaneous friction may be advantageously employed. After exposure to wet, to strip and rub the surface of the body till it glows, is unquestionably the best means to prevent taking cold.

I do not presume so strenuously to recommend friction of the skin as a means of supporting the healthy action of the external surface of the body, and of promoting cutaneous perspiration, without having witnessed remarkable changes for the better, produced in the constitution by adopting and persevering in this practice. Indeed I am disposed to attribute much of the benefit derived from exercise on horseback, as well as the good effects of a sea voyage towards a mild climate, to the increase of perspiration produced by these modes of gestation.

Every person suspicious of predisposition to pulmonary consumption ought at all times, but especially in cold weather, to wear a quantity of woollen clothing sufficient to obviate any approach to the perception of chillness; independently however of the actual presence of obstinate hoarseness or cough, I am disposed to think that the requisite quantity of flannel is more advantageously worn over the usual shirt, than in immediate contact with the skin.

The possibility of communicating this disease by contagion is a point that has been much agitated. As a measure of precaution, the delicate ought to decide this question for themselves in the affirmative. Exhalation from the lungs is the mode by which infectious diseases are most generally propagated; and from analogy we might infer that air impregnated with the effluvia of these or

gans in a state of ulceration, would have a tendency to excite diseased action of a similar kind if received into the lungs of a person previously disposed to this complaint. I have seen more than one instance of a husband who appeared to have no previous disposition to consumption, being affected with a distressing cough, which continued to harass him for months while his wife was lingering under that disease. On one melancholy occasion I witnessed the successive deaths of three young ladies, two of whom, in my opinion, decidedly caught the disease in consequence of their sedulous attention, during the progress of the indisposition, to her who was first affected, who evidently was of a phthisical habit, which was not apparent in either of the others.

If the presence of the symptoms which have been already described as characterising this disease renders its existence no longer equivocal, the person so affected ought without delay to migrate towards a warmer climate. Should circumstances render this expedient impracticable, the next best plan a phthisical person can adopt is to remove into a low and rather damp situation. The fatal event of pulmonary consumption is uniformly accelerated by residing in an elevated region. There are even instances on record of phthisis making its appearance in families, previously unaffected by it, on changing their place of residence from a level to a hilly country. In Holland, pulmonary consumption is a disease of comparatively rare occurrence. The same situations that predispose to ague are unfavorable to the attack of phthisis, as if these two states of the constitution were incompatible with each other. The physicians of ancient Rome were accustomed to send their consumptive patients to the low and marshy land of Egypt. Cicero, the celebrated orator, who, in his youth, was threatened with consumption, as the hollow temples and sharp features of his remaining busts abundantly testify, travelled into Egypt for the recovery of his health.

In the incipient stages of phthisis pulmonalis the dry vomit taken in a morning, fasting, I have known occasionally to be of use. Keeping up a copious discharge from the surface of the chest by the savin ointment subsequent to the application of a blistering-plaster, sometimes appears to arrest the progress of the disease.

When symptoms of incipient phthisis have been accompanied by tumors commencing at the clavicle and extending upwards towards the ear, I have seen much benefit from the administration of calomel combined with steel.

When recovery is despaired of, a diet consisting of buttermilk

and the lighter farinacea, prolongs existence, and mitigates the distress of the cough more effectually than the use of opium. From a medicine, which of late years has been much extolled, as diminishing the frequency of the pulse, (*digitalis*) I am sorry to say, I have seen no permanent benefit produced in this disease; and notwithstanding the boast of empiricism, a remedy that will heal ulceration or resolve tubercles, I believe yet remains to be discovered.

SMALL-POX, (*Variola.*)

THIS disease, which originally came from Arabia, is, since the discovery of vaccination, not so general as heretofore; nor does it appear to be of so malignant a type. It is, nevertheless, a most contagious malady; and for many years proved the scourge of civilized as well as uncivilized nations. It generally makes its appearance about the spring. It is very frequent in summer, less so in autumn, and still less in winter. Children are most liable to have it; and those whose food is unwholesome, who want proper exercise, and abound with gross humors, run the greatest hazard of catching it.

The disease is distinguished into the distinct and confluent kind; the latter of which is always attended with danger.

Causes.—The small-pox is commonly caught by infection. Since the disease was first brought into Europe, the infection has never been wholly extinguished, nor have any proper methods, as far as I know, been taken for that purpose; so that now it has become in a manner constitutional.

Symptoms.—This disease is so generally known, that a minute description of it is unnecessary. Children commonly look a little dull, seem listless and drowsy for a few days before the more violent symptoms of the small-pox appear. They are likewise more inclined to drink than usual, have little appetite for solid food, complain of weariness, and, upon taking exercise, are apt to perspire. These symptoms are succeeded by slight fits of cold and heat in turns, which, as the time of the eruption approaches, become more violent, and are accompanied with pains in the head and loins, vomiting, &c. The pulse is quick, with a great heat of the skin, and restlessness. When the patient drops asleep, he wakes in a kind of horror, with a sudden start, which is a very

common symptom of the approaching eruption; as are also convulsion-fits in very young children.

About the third or fourth day from the time of sickening, the small-pox generally begin to appear; sometimes, indeed, they appear sooner, but that is no favorable symptom. At first they very nearly resemble flea-bites, and are soonest discovered on the face, arms, and breast.

The most favorable symptoms are a slow eruption, and an abatement of the fever as soon as the pustules appear. In a mild distinct kind of small-pox the pustules seldom appear before the fourth day from the time of sickening, and they generally keep coming out gradually for several days after. Pustules which are distinct, with a florid red basis, and which fill with thick purulent matter, first of a whitish, and afterwards of a yellowish color, are the best.

A livid brown color of the pustules is an unfavorable symptom; as also when they are small and flat, with black specks in the middle. Pustules which contain a thin watery ichor are very bad. A great number of pox on the face is always attended with danger. It is likewise a bad sign when they run into one another.

It is a most unfavorable symptom when petechiæ, or purple, brown, or black spots are interspersed among the pustules. Bloody stools or urine, with a swelled belly, are bad symptoms; as is also a continual strangury. Pale urine and a violent throbbing of the arteries of the neck are signs of an approaching delirium or of convulsion-fits. When the face does not swell, or falls before the pox come to maturity, it is very unfavorable. If the face begins to fall about the eleventh or twelfth day, and at the same time the hands and feet begin to swell, the patient generally does well; but when these do not succeed each other, there is reason to apprehend danger. When the tongue is covered with a brown crust, it is an unfavorable symptom. Cold shivering fits coming on at the height of the disease, are likewise unfavorable. Grinding of the teeth, when it proceeds from an affection of the nervous system, is a bad sign; but sometimes it is occasioned by worms, or a disordered stomach.

All that is, generally speaking, necessary during the eruptive fever, is to keep the patient cool and easy. He should not be confined to bed, but should sit up as much as he is able, and should have his feet and legs frequently bathed in lukewarm water. His food ought to be very light, and he should be as little disturbed with company as possible.

Much mischief is done at this period by confining the patient too soon to his bed, and plying him with warm cordials, or sudorific medicines. Every thing that heats and inflames the blood increases the fever, and pushes out the pustules prematurely. This has numberless ill effects. It not only increases the number of pustules, but likewise tends to make them run into one another, and when they have been pushed out with too great violence, they generally fall in before they come to maturity.

The food in this disease ought to be very light, and of a cooling nature, as panado, or bread boiled with equal quantities of milk and water, good apples roasted, or boiled with milk, and sweetened with a little sugar, or such like.

The drink may be equal parts of milk and water, clear sweet-whey, barley-water, or thin gruel. After the pox are full, butter-milk, being of an opening and cleansing nature, is a very proper drink.

Medicine.—This disease is generally divided into four different periods, viz. the fever which precedes the eruption, the eruption itself, the suppuration or maturation of the pustules, and the secondary fever.

It has already been observed, that little more is necessary, during the primary fever, than to keep the patient cool and quiet, allowing him to drink diluting liquors, and bathing his feet frequently in warm water. Though this be generally the safest course that can be taken with infants, yet adults of a strong constitution and plethoric habit sometimes require bleeding. When a full pulse, a dry skin, and other symptoms of inflammation, render this operation necessary, it ought to be performed.

[Mild cathartics are highly useful during the eruptive fever. Dr. Mead and Boerhaave recommended calomel as one of the best purgatives in small pox. It is mild in its operation, and seems to possess peculiar powers in moderating the violence of the disease. In cases of great excitement, more active purging may be resorted to; as efficient doses of calomel and jalap, or calomel and scammony; aided occasionally by the neutral purgative salts, or castor oil. Gentle purgatives may be beneficially employed throughout the whole course of the disease. Emetics are sometimes useful in the commencement of the disease, particularly when there is evidence of vitiated secretions in the stomach. Cooling diaphoretics, as nitre and antimony, and the spirit of Mindererus, may often be exhibited with advantage during the eruptive fever. "But the most grateful, and at the same time the most safe and valuable

means for moderating the eruptive fever, and thereby lessening the number of pustules, is the cooling regimen. The free admission of cool air into the sick chamber during the eruptive fever, is in all cases, whether the disease be of the distinct or the confluent variety, of great importance; and it seldom indeed fails to mitigate the symptoms, in a greater or less degree, throughout the whole course of the disease. The temperature of the sick chamber must of course be regulated according to the season of the year, and the degree of febrile excitement present."

In violent cases, without great care is observed, the globe of the eye is apt to become affected by the pustules, and result in blindness. To prevent this, pieces of folded linen wet with cold water, or cold milk and water, should be kept applied to the eyes during the eruptive fever.]

The rising of the small-pox is often prevented by the violence of the fever; in this case the cool regimen is strictly to be observed. The patient's chamber must not only be kept cool, but he ought likewise frequently to be taken out of bed, and to be lightly covered with clothes while in it.

If the patient be troubled with a strangury, or suppression of urine, which often happens in the small-pox, he should be frequently taken out of bed, and, if he be able, should walk across the room with his feet bare. When he cannot do this, he may be set on his knees in bed, and should endeavor to pass his urine as often as he can. When these do not succeed, a teaspoonful of the sweet spirits of nitre may be occasionally mixed with his drink. Nothing more certainly relieves the patient, or is more beneficial in the small-pox, than a plentiful discharge of urine.

If the mouth be foul, and the tongue dry and chapped, it ought frequently to be washed, and the throat gargled with water and honey, sharpened with a little vinegar or currant-jelly.

When petechiæ, purple, black, or livid spots appear among the small-pox, the Peruvian bark must immediately be administered, in as large doses as the patient's stomach can bear. For a child, two drachms of bark in powder may be mixed in three ounces of common water, one ounce of simple cinnamon water, and two ounces of the syrup of orange or lemon. This may be sharpened with the spirit of vitriol, and a table-spoonful of it given every hour. If it be given to an adult in the same form, he may take, at least, three or four spoonsful every hour. This medicine ought not to be trifled with, but must be administered as frequently as the stomach can bear it; in which case it will often produce very

happy effects. I have frequently seen the petechiæ disappear, and the small-pox, which had a very threatening aspect, rise and fill with laudable matter, by the use of the bark and acids.

[Under similar circumstances—that is, where the pustules are slow in filling up, or the fluid in them remains watery—opium in combination with camphor is highly recommended by Dr. Philip. In cases attended with delirium, camphor is particularly valuable. It may be given in either pills or julep.]

When the eruption subsides suddenly, before they have arrived at maturity, the danger is very great. In this case blistering-plasters must be immediately applied to the wrists and ancles. Sometimes bleeding has a surprising effect in raising the pustules after they have subsided; but it requires skill to know when this is proper, or to what length the patient can bear it. Sharp cataplasms, however, may be applied to the feet and hands, as they tend to promote the swelling of these parts, and by that means to draw the humors towards the extremities.

The most dangerous period of this disease is the secondary fever. This generally comes on when the small-pox begin to blacken, or turn on the face; and most of those who die of the small-pox are carried off by this fever.

Nature generally attempts, at the turn of the small-pox, to relieve the patient by loose stools. Her endeavors this way are by no means to be counteracted, but promoted, and the patient, at the same time, supported by food and drink of a nourishing and cordial nature.

If, at the approach of the secondary fever, the pulse be very quick, hard, and strong, the heat intense, and the breathing laborious, with other symptoms of inflammation of the breast, the patient must immediately be bled. The quantity of blood to be let must be regulated by the patient's strength, age, and the urgency of the symptoms.

But in the secondary fever, if the patient be faintish, the pustules become suddenly pale, and if there be great coldness of the extremities, blistering-plasters must be applied, and the patient must be supported with generous cordials.

[Emetics are often of great utility in such cases.]

The pustules should be opened when they begin to turn of a yellow color. Very little art is necessary for this operation. They may either be opened with a lancet or a needle, and the matter absorbed by a little dry lint. As the pustules are generally first ripe on the face, it will be proper to begin with opening these, and

the others of course as they become ripe. The pustules generally fill again, a second, or even a third time, for which cause the operation must be repeated, or rather continued, as long as there is any considerable appearance of matter in the pustules.

Opening the pustules not only prevents the resorption of the matter into the blood, but likewise takes off the tension of the skin, and by that means greatly relieves the patient. It likewise tends to prevent the pitting, which is a matter of no small importance.

[Keeping the patient's chamber darkened, will very generally prevent the formation of pits or scars from the pustules, even in cases of great violence. Lunar caustic has also been used for the same purpose. It appears, from the reports of those who have used it, that, "if the pustules are opened with a lancet, and touched with a pointed piece of caustic, on the *first or second day* of their appearance, they will be wholly destroyed, and leave no marks; but on the *third day* it will be quite useless."]

It is generally necessary, after the small-pox are gone off, to purge the patient. If, however, the body has been open through the whole course of the disease, or if buttermilk and other things of an opening nature have been drank freely, after the height of the small-pox, purging becomes less necessary; but it ought never to be wholly neglected.

When imposthumes happen after the small-pox, which is not seldom the case, they must be brought to suppuration as soon as possible, by means of ripening poultices; and when they have been opened, or have broke of their own accord, the patient must be purged.

VACCINA.—COW-POX.

[As a preventive of the small-pox, the vaccine inoculation is now universally practised. It was discovered by Dr. Jenner about the year 1796, and a knowledge of the benefits to be derived from it soon spread throughout Europe and America. Since that period every civilized people on earth have experienced and acknowledged its blessings. At its first introduction, it met with much distrust and opposition among physicians, but its constant success has not only disarmed all opposition, but has shorn one of the most fearful and loathsome diseases of all its terrors.]

The cow-pox is generally a very mild and safe disease, consisting of a single vesicle forming on the place where the inoculation was performed. On the third day, the scratch where the vaccine

matter was introduced is slightly red, and, if pressed with the finger, feels hard. Next day, the red point is a little increased, and somewhat radiated. On the fifth day, a small vesicle appears, but it is more easily seen on the sixth. This gradually increases, until it acquires the size of a split pea. The color of the vesicle is dull white, like pearl. Its shape is circular, or slightly oval when the inoculation has been made with a lengthened scratch; acquiring about the tenth day a diameter equal to about the third or fourth part of an inch. Till the end of the eighth day the surface is uneven, being depressed in the centre, but on the ninth day it becomes flat, or sometimes higher at the middle than at the edges. The margins are tinged and rounded, projecting a little over the base of the vesicle. The vesicle is not simple but cellular, and contains a clear, limpid fluid, like the purest water.

On the eighth or ninth day, the vesicle is surrounded with an areola or circle of intense red color, which is hard and tumid. About this time an erythematic efflorescence sometimes takes place near the areola, and spreads gradually to a considerable part of the body. It consists of patches, highly elevated, and is attended with symptoms of fever. On the eleventh or twelfth day, as the areola decreases, the surface of the vesicle becomes brown at the centre, and is not so clean at the margin; the cuticle gives way, and there is found a glassy hard scab, of a reddish brown, or mahogany color, which is not detached, in general, till the twentieth day. When it falls off, a scar about half an inch in diameter is seen, and having as many pits as there were cells in the vesicle.

During the progress of the vesicle, there is often some disorder of the constitution; and occasionally a papulous eruption appears next the vesicle. As security against the small-pox is not ensured by spurious vaccine vesicles, it becomes necessary to study carefully the character of the genuine disease, which is here briefly described. [If the pustule be scratched, and common inflammation excited, the disease will be spurious. It is thought by some that cutting too deep in inoculating with vaccine matter, will have the same unfavorable effect. The best method of vaccinating, is to introduce the point of a lancet into the pustule about the seventh day, and after it is withdrawn impregnated with the virus, to produce a slight scratch on the arm, sufficient to raise the cuticle, but not to draw blood, as that would wash the virus from the wound, and prevent its taking effect. The dry scab, however, is most commonly used for vaccinating. As much as may be necessary, is to be softened with water to the consistence of cream, and then

used as in the other case. The scab, in order to be preserved, must be enclosed in a tight glass vessel, or in beeswax. It cannot be safely depended on, however, after it is five or six months old.

The *spurious Cow-pox* may be known by considerable inflammation and elevation of the skin generally commencing as early as the second day. The pustule arrives at maturity in a much shorter period than in the genuine disease. By the third or fifth day from the first appearance of inflammation, scabbing commences. The pustule appears more like a common festering sore, than that produced by vaccine matter. The spurious pock is more elevated, not depressed in the centre, is ragged in its circumference, and, instead of a clear limpid fluid, contains an opaque purulent matter. It suppurates more than the genuine vaccine pox.

It occasionally happens, that considerable febrile excitement attends the vaccine disease. When that is the case, reducing the diet, and mild laxatives are necessary. When there is much pain and inflammation of the arm, applications of cold water, of a weak solution of sugar of lead, or poultices made of lead-water, may be resorted to with benefit, in connection with the use of gentle purgatives.

It is difficult to make the vaccine disease take effect in very hot or very cold weather; a moderate temperature is best; and for that reason the spring and fall seasons should be selected for performing the operation.]

[VARIOLOID.—MODIFIED SMALL-POX.]

FROM the earliest records of the disease, small-pox epidemics have generally been accompanied by various eruptive diseases, partaking in a greater or less degree of the characteristics of true small-pox. Since the introduction of vaccination, these anomalous eruptions have become much more common; and the one now under consideration is very generally looked upon as a modification of the original disease, produced by the influence of the contagion of small-pox upon systems imperfectly protected against it by previous vaccination. It has been known to occur, however, among those who have had small-pox from inoculation, as well as in a few cases where that disease had been contracted naturally.

Varioloid is generally mild in character; but is very irregular in this respect; presenting in different cases every degree of violence, from the mildest forms of chicken-pox to the higher grades of distinct small-pox.

From the variableness of the symptoms, it is often difficult to decide for some days whether the disease be varioloid or true small-pox. "Very generally, however, the smallness of the pustules, the whey-like fluid which they contain, and particularly the early period at which they begin to dry and scab, will enable us to distinguish such cases from genuine small-pox." Attention to the following circumstances, will, in most cases, enable us to decide on the true character of the eruption. "1. The eruption appears in successive clusters, occurring at uncertain periods between the second and fifth day.—2. The eruption seldom, if ever, enters into complete suppuration, as do the small-pox.—3. The eruption is not attended with fever, except in very violent cases.—4. Desiccation or scabbing invariably occurs much earlier than in regular small-pox;—commencing generally as early as the fifth or sixth day; and the scabs usually separate by the eighth or ninth day, leaving red disks or tuberculous elevations instead of depressions." By comparing this with the course invariably pursued by true small-pox, we can in all cases distinguish between the two diseases with great certainty.

Most cases of this disease are so mild as to require no attention farther than a strict adherence for a few days to a cooling antiphlogistic regimen. When the symptoms are more violent, and demand medical treatment, the same course is to be pursued, in every respect, that has been recommended as proper in mild cases of true small-pox.]

[VARICELLA.—CHICKEN-POX.]

THIS disease is also termed *Swine-pox*; and is generally ushered in by restlessness, thirst, loss of appetite, and slight fever. Occasionally, however, the febrile symptoms are violent, with great pain in the head, back, and extremities. These symptoms disappear as soon as the eruption begins to come out. "It appears first on the breast and back, next on the face and scalp, and lastly on the extremities." The vesicles "generally come out in succession during three or four days, so that at the same time, some will be just appearing, some perfectly matured, others shrivelling, and a fourth set converted into scabs." The fluid contained in them never gets solid, and pits are seldom left behind. The disease rarely occurs a second time in the same person.

It is a very simple disease, and in the milder forms requires no medical treatment. When the fever is very violent, bleeding and

purging may be resorted to with great advantage. In all cases, the patient should be kept moderately cool, and restricted to light diet, with tepid diluent drinks.]

MEASLES. (*Morbilli* or *Rubeola*.)

THE measles appeared in Europe about the same time with the small-pox, and have a great affinity to that disease. They both came from the same quarter of the world, are both infectious, and seldom attack the same person more than once. The measles are most common in the spring season, and generally disappear in summer. The disease itself, when properly managed, seldom proves fatal; but its consequences are often very troublesome.

Causes.—This disease, like the small-pox, proceeds from infection, and is more or less dangerous according to the constitution of the patient, the season of the year, the climate, &c.

Symptoms.—The measles, like other fevers, are preceded by alternate fits of heat and cold, with sickness and loss of appetite. The tongue is white, but generally moist. There is a short cough, a heaviness of the head and eyes, drowsiness, and a running at the nose. Sometimes, indeed, the cough does not come before the eruption has appeared. There is an inflammation and heat in the eyes, accompanied with a defluxion of rheum, and great acuteness of sensation, so that they cannot bear the light without pain. The eyelids frequently swell so as to occasion blindness. The patient generally complains of his throat; and a vomiting or looseness often precedes the eruption. The stools in children are commonly greenish; they complain of an itching of the skin, and are remarkably peevish. Bleeding at the nose is common, both before and in the progress of the disease.

About the fourth day, small spots, resembling flea-bites, appear, first upon the face, then upon the breast, and afterwards on the extremities: these may be distinguished from the small-pox by their scarcely rising above the skin. The fever, cough, and difficulty of breathing, instead of being removed by the eruption, as in the small-pox, are rather increased; but the vomiting generally ceases.

About the sixth or seventh day from the time of sickening, the measles begin to turn pale on the face, and afterwards upon the body; so that by the ninth day they entirely disappear. The fe-

ver, however, and difficulty of breathing often continue, especially if the patient has been kept upon too hot a regimen. Petechiæ, or purple spots, may likewise be occasioned by this error.

A violent looseness sometimes succeeds the measles; in which case the patient's life is in imminent danger.

Such as die of the measles generally expire about the ninth day from the invasion, and are commonly carried off by peripneumony, or inflammation of the lungs.

The most favorable symptoms are a moderate looseness, a moist skin, and a plentiful discharge of urine.

When the eruption suddenly recedes, and the patient is seized with delirium, he is in the greatest danger. If the measles turn too soon of a pale color, it is an unfavorable symptom, as are also great weakness, vomiting, restlessness, and difficulty of swallowing. Purple or black spots appearing among the measles, are very unfavorable. When a continual cough, with hoarseness, succeeds the disease, there is reason to suspect an approaching consumption of the lungs.

Our business in this disease is to assist nature, in throwing out the eruption, if her efforts be too languid; but when they are too violent, they must be restrained by evacuations and cool diluting liquors. We ought likewise to endeavor to appease the most urgent symptoms, as the cough, restlessness, and difficulty of breathing.

Regimen.—The cool regimen is necessary here as well as in the small-pox. The food, too, must be light, and the drink diluting. Acids, however, do not answer so well in the measles as in the small-pox, as they tend to exasperate the cough. The most suitable liquors are decoctions of liquorice with marshmallow roots and sarsaparilla, infusions of linseed or of the flowers of elder, saffron, balm-tea, clarified whey, barley-water, and boneset tea. These, if the patient be costive, may be sweetened with honey; or, if that should disagree with the stomach, a little manna may occasionally be added to them.

Medical Treatment.—The measles being an inflammatory disease, without any critical discharge of matter, as in the small-pox, bleeding is necessary, especially when the fever runs high, with difficulty of breathing, and great oppression of the breast. I do not know any disease wherein bleeding is more necessary than in the measles. I have always found it relieve the patient. Practitioners, however, are at variance with respect to the time bloodletting may be employed with the most advantage. Dr. Mor-

ton thinks it requisite as soon as the eruption is completed. Sydenham recommends it after the eruption has disappeared : but practice, in this respect, should be regulated by the degree of the accompanying inflammation of the lungs, without attending to the particular period of the disorder or the state of the eruption : this is the generally approved practice at the present day.

Bathing the feet and legs frequently in lukewarm water both tends to abate the violence of the fever, and to promote the eruption.

The patient is often greatly relieved by vomiting. When there is a tendency this way, it ought to be promoted by drinking lukewarm water, or weak camomile-tea.

When the cough is very troublesome, with dryness of the throat, and difficulty of breathing, the patient may hold his head over the steam of warm water, and draw the vapor into the lungs.

If at the turn of the disease the fever assumes new vigor, and there appears great danger of suffocation, the patient must be bled according to his strength, and a blister applied, with a view to prevent the load from being thrown on the lungs, where, if an inflammation should fix itself, the patient's life will be in imminent danger.

In case the measles should suddenly disappear, or before the proper time, it will be necessary to pursue the same method which we have recommended when the small-pox recede. Blisters must be applied to the legs and arms, and the body rubbed all over with warm flannels. Warm poultices may likewise be applied to the feet and palms of the hands.

When inflammation attacks the chest, a warm bath strongly impregnated with salt, has been found a powerful subsidiary remedy. in addition to bloodletting.

If the symptoms manifest a tendency to a malignant form of disease, they must be treated accordingly, as directed in typhus fever.

Opiates are sometimes necessary, and should be given combined with some saline diaphoretic, at bed-time : but, they should never be given except in cases of extreme restlessness, a violent looseness, or when the cough is very troublesome. For children the syrup of poppies is sufficient. A teaspoonful or two may be occasionally given, according to the patient's age, or the violence of the symptoms.

During the whole course of the disease it will be highly proper to keep the body open; and therefore, if costiveness exist, it should be obviated by the use of gentle purgatives, as the syrup of rhubarb, with occasional doses of calomel or blue pills. Where the

difficulty of breathing and oppression at the chest are not relieved by bleeding, and other antiphlogistic means, a blister may be applied in the neighborhood of the part or between the shoulders. In removal of local inflammation, a blister often proves a valuable remedy.

After the measles are gone off, the patient ought to be purged. This may be conducted in the same manner as directed in the small-pox.

If a violent looseness succeed the measles, it may be checked by taking for some days a gentle dose of rhubarb in the morning, and an opiate over-night; but if these do not remove it, bleeding will seldom fail to have that effect.

Patients recovering after the measles should be careful what they eat or drink. Their food for some time ought to be light, and in small quantities; and their drink diluting, and rather of an opening nature, as butter-milk, whey, and such like. They ought also to beware of exposing themselves too soon to the cold air, lest a suffocating catarrh, an asthma, or a consumption of the lungs, should ensue.

Should a cough, with difficulty of breathing, and other symptoms of a consumption, remain after the measles, small quantities of blood may be frequently let at proper intervals, as the patient's strength and constitution will permit. The camphor mixture combined with a fourth part of the water of acetated ammonia, forms a very useful medicine in that particular species of consumption which frequently succeeds the measles. He ought likewise to remove to a free air, if in a large town, and to ride daily on horseback. He must keep close to a diet consisting of milk and vegetables; and lastly, if these do not succeed, let him remove to a warmer climate.

SCARLET FEVER. (*Scarlatina*.)

THE scarlet fever is so called from the color of the patient's skin, which appears as if it were tinged with red wine. It happens at any season of the year, but is most common towards the end of summer: at which time it often seizes whole families. Children and young persons are most subject to it.

[There are several species of scarlet fever, or rather, authors have divided the disease into three varieties, the simple, the angi-

nose, and the malignant; while Dr. Armstrong has again subdivided the last variety, into "the inflammatory, the congestive and the mixed" modifications of scarlatina. These distinctions are too minute and circumstantial for popular practice, and we shall therefore describe the disease under two forms only, viz. the simple or mild scarlet fever; and scarlet fever accompanied by ulceration of the throat, and malignant symptoms.

Symptoms.—The mild form of the disease is preceded by coldness and shivering, to which succeed febrile heat, thirst, and an accelerated pulse. The face swells about the fourth day, and irregular patches of a florid red color make their appearance on various parts of the body. In the course of three or four days afterwards the eruption disappears, and the cuticle falls off in brawny scales.

The second variety is marked by previous lassitude, dejection of the mind, pain in the head, followed by soreness, and a sense of stiffness in the muscles of the neck and shoulders, shiverings, and other febrile symptoms. To these succeed nausea; occasional vomiting; difficulty of swallowing; and a hurried respiration, with frequent sighing. The skin is red, hot, and dry; the breath burning to the lips; great thirst; a quick, weak, and sometimes a hard pulse; the tongue soon becomes dry, and very florid along the edges, with inflamed points projecting from its surface; and small darting pains are felt in different parts of the body, as if pricked with a needle. About the third day, the red appearance of the face, neck and breast, becomes more intense; scarlet patches appear about the nose and mouth; the glands beneath the lower jaw are painful to the touch, and enlarged; and the palate, tonsils, and inside of the throat partake of the general redness. Specks and collections of viscid mucus are frequently observed, similar to the sloughs which are seen in malignant sore throat. In a few hours the redness becomes universal over the whole body, and increases to a great degree of intensity. Upon pressure with the fingers, it disappears, and is perfectly smooth to the touch, nor is there the least appearance of pimples or pustules. About the fifth or sixth day, the intense redness abates gradually, and a brown color succeeds, when the skin becomes rough, and peels off in small scales like bran, and the patient is gradually restored to health. It sometimes happens, however, that after a few days amendment, unaccountable languor and debility are felt, followed by stiffness in the limbs, disturbed sleep, disrelish for food, accelerated pulse, scarcity of urine, and dropsical swellings. In cases

of a very malignant type, in addition to the common symptoms, there are great heat, nausea, and vomiting; with a small, quick pulse, and frequent and laborious breathing. Ulcerations appear on the tonsils and adjoining parts, covered with dark sloughs, and surrounded by a livid base. The efflorescence appears about the third day, but without relief, it assumes a dark or livid color, and between the patches, purple spots are intermixed. Delirium arises, a debilitating diarrhœa comes on, and not unfrequently hemorrhages from the nose, mouth and bowels, occur. It resembles very closely what is termed the malignant or ulcerous sore throat. (Thomas.) In most cases of this disease, the scarlet blush may be first discovered on the knees and elbows.

Treatment.—In the mild form of the disease, the exhibition of gentle cathartics, so as to keep the bowels open every day, together with the use of acid drinks, and cooling diaphoretics, and sponging the body with cold water during the febrile excitement, will generally arrest the disease. Bloodletting and emetics, however, are occasionally required in this species of scarlet fever; the first when the febrile reaction runs high, and the second when there is much nausea present. Children and young persons are sometimes seized with stupor or epileptic fits in the beginning of the disease. In such cases, the feet and legs should be bathed in warm water, and a blister may be applied to the back of the neck.

In cases of a higher grade, bloodletting is among the most successful and important means of cure. The great majority of writers are opposed to this practice, but experience has shown that when promptly and efficiently practised, it is capable of controlling and cutting short the malady with more certainty than any other remedy. Mr. Dewar, of Scotland, has recently published an account of the success of the bleeding plan in his hands, and my own experience with the lancet goes to confirm his in every respect. He says, "I have attended 183 persons laboring under this disease in its acute stage, that is, with the eruption still present upon the body, and out of that number it has been my good fortune to lose only two. (This was in the space of two years.) The gratifying success now mentioned, with which the cases occurring in my practice have been attended, is to be attributed to the early and efficient employment of bloodletting. In every case in which the remedy was properly used, I have found the symptoms greatly mitigated, and in many the disease wholly and suddenly subdued. To accomplish this purpose, however, a scanty or long-deferred bloodletting will not suffice. It must be practised, as in other case

of acute inflammation, so as to produce a marked impression on the circulation, while the quantity drawn must be so considerable as to make it probable that the impression will be permanent. On all occasions I have found it necessary to bleed, whatever was the age of the patient, to complete relaxation. The bleeding when thus practised is immediately followed by diminution of the heat of the body, of the force and frequency of the pulse, and of the headache and sore throat; and the eruption entirely disappears, and in many cases scarcely again becomes visible. While the blood yet flowed, many patients have expressed in strong terms the relief they enjoyed."

"Of late, Mr. D. has bled all persons who had passed the period of mere infancy in the horizontal posture, and when he has obtained what he considers a proper quantity of blood, he raised them into the erect posture till relaxation took place.

Although the commencement of the eruption is, without doubt, the time at which blood-letting can be practised with the greatest confidence of success, yet, while the pulse continues strong, and there is reason to believe that effusion has not taken place into the head, he does not hesitate to bleed, and has never had reason to regret it."

He invariably bled the patient until the eruption *disappeared*; and states that "the recoveries were uniformly rapid—and, it is gratifying to add, that I have not had even the approximation to a dropsical symptom." To sum up, if the lancet be used early, and to an insufficient extent, it will diminish the strength of the patient, without lessening the force of the fever; and if delayed too long, it will accelerate the effusion into the head." If on the other hand, it is practised at the proper time, and to a sufficient extent, it will prove a means of cure, safe and successful, far beyond any other.

Such purgatives as are recommended in the treatment of bilious fever, should be used throughout the whole course of this disease, of whatever grade it may be. Two or three evacuations should be obtained every twenty-four hours. Their use is not to be abandoned on the appearance of diarrhœa; for they will more certainly correct the cause giving rise to it than any other means. Mercurial purges are the best. Dr. Armstrong says, "It is somewhat remarkable, that calomel, though given in large and frequent doses, will hardly ever produce ptyalism (salivation) in scarlatina." He states that he has frequently given from six to eight grains of this article to children, twice, thrice, and even four times daily,

without having in a single instance known it to produce salivation. He considers it the best purgative in every variety of the disease.

Cold water applied to the surface of the body by affusion or sponging, cannot be too highly recommended in high grades of this disease. Dr. Bateman says, "We are possessed of no physical agent, as far as my experience has taught me, (not excepting even the use of blood-letting in acute inflammation,) by which the functions of the animal economy are controlled with so much certainty, safety, and promptitude, as by the application of cold water to the skin, under the augmented heat of scarlatina and of some other fevers. It is in fact the only sudorific or anodyne that will not disappoint the expectation of the practitioner under these circumstances. I have had the satisfaction, in numerous instances, of witnessing the immediate improvement in the symptoms, and the rapid change produced in the countenance of the patient, produced by washing the skin. Invariably, in the course of a few minutes, the pulse has been diminished in frequency, the thirst abated, the tongue has become moist, a general free perspiration has broken forth, the skin has become soft and cool, and the eyes have brightened; and these indications of relief have been speedily followed by a calm and refreshing sleep." When the arterial reaction is violent, the water should be poured or dashed over the body; where this is impracticable, washing or sponging the surface will answer. Vinegar may be added to the water, when the heat is very intense. Where there are evidences of internal inflammation, the warm bath may be occasionally resorted to with advantage.

Emetics are useful in the beginning of the disease, when there is much nausea present. They are particularly valuable, however, in cases attended with affection of the throat. A single emetic of ipecac. will often subdue the inflammation as by a charm, and enable the patient to breathe and swallow with ease. They may be repeated as often as the swelling of the tonsils may seem to demand. A tea made of red pepper is another very important remedy for the sore throat. It is made by taking two tablespoonfuls of common red pepper, (or a teaspoonful of cayenne pepper,) and two teaspoonfuls of fine salt, and after beating them into a paste, pour upon them half a pint of boiling water; then strain it, and add half a pint of good vinegar. An adult may take a tablespoonful of tea every half hour; and frequently gargle the throat with it. It will never fail to afford relief, if persevered in. I have seen very violent cases of sore throat relieved by this tea alone. For detaching the sloughs and healing the ulcers, a very weak

solution of blue vitriol may be used. It should be applied to the parts by means of a small mop, care being taken not to touch any part of the mouth or throat which is not ulcerated. Dilute muriatic acid and honey are recommended to be made into a gargle for the same purpose, and used at discretion. When the inflammation of the throat is very great, much relief may be obtained from blisters, applied so as to reach from one ear to the other. The discharge from the blistered surface must be kept up as long as possible. The inhalation of various kinds of vapor may often be resorted to with advantage. (See Peripneumonia Notha.)

When collapse supervenes, the system should be supported by gentle stimulants, as wine-whey, weak solutions of the muriate or carbonate of ammonia, and camphor. The patient should be confined to a milk diet, and perfect quietude enjoined.

In the stage of excitement, cooling drinks, acidulated with lemon juice or elixir vitriol, may be freely allowed; but in the latter stages, teas made of sage, catnip, balm, or boneset, are preferable.

During convalescence, a light, digestible and unirritating diet, should be strictly adhered to.

When dropsical symptoms appear after this disease, they are generally the result of not keeping the bowels open throughout the progress of the complaint. When they occur, the disease is to be treated as directed under the head of *Dropsy*.

Small doses of belladonna are said to be an effectual preventive of scarlatina. Dissolve three grains of the extract of belladonna in one ounce of cinnamon water, and give it in doses of from one to three drops to children under one year old, and add one drop more for every year above this age.

The patient should be accommodated with frequent changes of linen and bedclothes, and his chamber kept freely ventilated.]

ERYSIPELAS.—ST. ANTHONY'S FIRE.

THIS disease attacks persons at any period of life, but is most common between the ages of thirty and forty. Persons of a sanguine or plethoric habit are most liable to it. It often attacks young people, and pregnant women; and such as have been afflicted with it are very liable to have it again. Sometimes it is a primary disease, and at other times only a symptom of some

other malady. Every part of the body is liable to be attacked by erysipelas, but it most frequently appears on the legs or face, especially the latter. It is most common in autumn, or when hot weather is succeeded by cold and wet.

Causes.—Mental emotions; exposure of the body to cold when much heated by previous exercise; the intemperate use of alcoholic liquors; vicissitudes of the weather; suppression of accustomed evacuations; impure air; high living; hereditary predisposition.

Symptoms.—Erysipelas attacks with a shivering, thirst, loss of strength, pain in the head and back, heat, restlessness, and a quick pulse; to which may be added vomiting, and sometimes delirium. On the second, third, or fourth day, the part swells, becomes red, and small pustules appear; at which time the fever generally abates.

When it attacks the face, it swells, appears red, and the skin is covered with small pustules filled with clear water. One or both eyes are generally closed with swelling; there is inflammation of the throat, and difficulty of breathing and swallowing. If the mouth and nostrils be very dry, and the patient drowsy, there is reason to suspect inflammation of the brain.

If the erysipelas affects the breast, it swells and becomes exceedingly hard, with great pain, and is apt to suppurate. There is a violent pain in the arm-pit on the side affected, where an abscess is often formed.

If in a day or two the swelling subsides, the heat and pain abate, the inflamed part turns yellow, and the cuticle breaks and falls off in scales, the danger is over.

The event of this disease depends greatly upon the constitution of the patient. It is seldom dangerous; but when the constitution is feeble, the legs will sometimes swell to a prodigious size, and the cure prove extremely difficult. It has often proved fatal to people in the decline of life, who were of a scorbutic habit.

When the erysipelas is large, deep, and affects a very sensible part of the body, the danger is great. If the red color changes into a livid or black, it will end in a mortification. Sometimes the inflammation cannot be discussed, but comes to suppuration; in which case fistulæ, gangrene, or mortification, often ensue.

Such as die of this disease are commonly carried off by the fever, which is attended with difficulty of breathing, and sometimes with delirium and great drowsiness. They generally die about the seventh or eighth day.

Regimen.—In erysipelas the patient must neither be kept too hot nor too cold, as either of these extremes will tend to make it

retreat, which is always to be guarded against. When the disease is mild, it will be sufficient to keep the patient within doors, without confining him to his bed, and to promote perspiration by diluting liquors.

The diet ought to be slender, and of a moderately cooling and moistening quality, as gruel, panado, chicken or barley broth, with cooling herbs and fruits, avoiding flesh, fish, strong drink, spices, pickles, and all other things of a heating nature:—the drink may be barley-water, an infusion of elder-flowers, common whey, and such like.

Treatment.—The treatment of idiopathic* erysipelas varies according to the causes, symptoms, complications, and anomalies of the disease, and may be divided into internal and external. That the mode of relief must be very different in phlegmonous erysipelas from what it is in other varieties of this disorder, must be plain to every one who has the least knowledge of diseases in general.

“Common cases of *acute*, or phlegmonous, erysipelas, yield to mild purgatives, and a light vegetable diet, with which remedies practitioners usually conjoin diaphoretics and the saline mixture. Whether bleeding is right, or not, in this species of erysipelas, is a point on which different sentiments prevail. In the milder forms of the disease venesections are pretty generally dispensed with. Nor is it necessary to repeat bleeding, in any case of erysipelas, so frequently as is done in other inflammatory disorders. As regards this, however, we must be guided by the state of the pulse, and other symptoms, never forgetting the patient’s age, strength, &c. *Cæteris paribus*, the patient will bear bleeding better in the country than in a large city, and especially in an hospital; and, as has been truly remarked, unless there be considerable tendency to delirium and coma, blood-letting can seldom be advantageously repeated. Instead of this practice, Dr. Bateman judiciously recommends local bleeding and blistering, but not upon or very near the diseased surface, whereby he avoids producing the troublesome sores, the frequency of which in former times, after taking blood from erysipelatous parts, led Mr. B. Bell to pronounce a general condemnation of the method.”

In this disease much mischief is often done by external applications. People, when they see an inflammation, immediately think that something ought to be applied to it. This, indeed, is neces-

*A primary disease, arising spontaneously, and not as a symptom of any other, when it would be termed symptomatic erysipelas.

sary in large phlegmons, or boils; but in erysipelas the safer course is to apply nothing. Almost all ointments, salves, and plasters, being of a greasy nature, tend rather to obstruct and repel, than promote any discharge from the part. At the beginning of this disease, it is neither safe to promote suppuration, nor to repel the matter too quickly. The erysipelas, in many respects, resembles the gout, and is to be treated with the greatest caution. Fine wool, or very soft flannel, are the safest applications to the part. These not only defend it from the external air, but likewise promote perspiration, which has a great tendency to carry off the disease.

[After the inflammatory symptoms are in a measure subdued, emetics will often exercise a powerful influence over the disease. They are particularly applicable in cases where the antiphlogistic treatment cannot be carried to greater extent without danger, and the disease still remains unsubdued.]

If the fever be high, the pulse hard and strong, and the patient vigorous, it will be proper to bleed; but the quantity must be regulated by these circumstances, and the operation repeated as the symptoms may require. If the patient has been accustomed to strong liquors, and the disease attacks his head, bleeding is absolutely necessary.

Bathing the feet and legs frequently in lukewarm water, when the disease attacks the face or brain, has an excellent effect. It tends to make a derivation from the head, and seldom fails to relieve the patient. When bathing proves ineffectual, poultices or sinapisms may be applied to the soles of the feet, for the same purpose.

In cases where bleeding is requisite, it is likewise necessary to keep the body open. This may be effected by the daily administration of such purgatives as are recommended in the treatment of fevers generally. Some recommend very large doses of nitre in the erysipelas; but nitre seldom sits easy on the stomach when taken in large doses. It is, however, one of the best medicines when the fever and inflammation run high. Half a drachm of it, with four or five grains of rhubarb, may be taken in the patient's ordinary drink, three or four times a-day.

When the erysipelas leaves the extremities, and seizes the head, so as to occasion a delirium or stupor, it is absolutely necessary to open the body. If mild purgatives fail to have this effect, stronger ones must be given. Blisters must likewise be applied to the neck, or behind the ears, and cataplasms laid to the soles of the feet.

When the inflammation cannot be discussed, and the part has a tendency to ulcerate, it will then be proper to promote suppuration, which may be done by the application of ripening poultices with saffron, warm fomentations, and such like.

Such as are liable to frequent attacks of erysipelas ought carefully to guard against all violent passions, to abstain from strong liquors, and all fat, viscid, and highly nourishing food. They should likewise take sufficient exercise, carefully avoiding the extremes of heat or cold. Their food should consist chiefly of milk, and such fruits, herbs, and roots, as are of a cooling quality, and their drink ought to be whey, butter-milk, and such like. They should never suffer themselves to be costive. If that cannot be prevented by suitable diet, it will be proper to take frequently a dose of rhubarb, or some other mild purgative.

[In all the forms of erysipelas, except the phlegmonous, warm water is the most safe, effectual, and grateful application that can be made. It should be freely used when the skin is dry and parched, accompanied with great heat. But neither cold nor warm water are admissible when the skin is moist. In the phlegmonoid form, rubbing the parts frequently with rye-meal or starch, will generally give relief.]

["Several late English writers recommend making incisions through the inflamed skin and subjacent adipose and cellular textures. Mr. Lawrence, who strongly recommends this practice, asserts, that "these incisions are followed, very quickly, and sometimes almost instantaneously, by relief, and cessation of the pain and tension;" and a corresponding declension of the inflammation almost always takes place. Mr. Hutchinson also speaks decidedly in favor of making incisions into the erysipelatous surface. Mr. Lawrence recommends making one free incision, extending from one boundary to the other, through the centre of the inflamed part. Mr. Dobson, who likewise advocates this practice in a modified form, advises a great number of punctures to be made, at a short distance from each other, over the whole disk of the affected part. "The practice of making incisions in phlegmonous erysipelas," says Mr. Plymsol of Glasgow, "has been established in the Royal Infirmary for the last four or five years, and has invariably proved successful; long incisions are generally preferred.""]

As the erysipelas resembles the gout in many respects, it ought not to be rashly tampered with. Should it be driven from the part affected, it may fix upon a more dangerous one. The alarm is

generally greatest when it removes to or attacks the face. I have, however, known it seize upon the knee, and after laying the bones bare, prove fatal. There is a peculiar species of Erysipelas in this country termed Shingles, (*Erysipelas phlyctænodes*) and by the ancients Zona or Zoster, from surrounding the trunk of the body like a belt. It consists of an aggregation of vesicles filled with a limpid or yellowish colored fluid. The eruption makes its first appearance on some spot of the chest, and gradually extends laterally both ways. It is a vulgar, but unfounded opinion, that if the extremities of the eruption meet so as completely to surround the body, the patient must die. As this complaint seems often to be critical, we should not be too eager to repel it by externals. If the eruption suddenly subside, or be driven in by external applications, a paroxysm of asthma is not unfrequently the consequence. To remove this metastasis, stimulant applications are requisite, such as the ointment of yellow resin with an eighth part of the red precipitate, or the citrine ointment, by which the inflammation of the skin is reproduced, and the discharge kept up. The general treatment of this complaint consists in keeping the patient moderately warm, and giving tepid diluent fluids, till the vesicles begin spontaneously to dry. Their desiccation may be promoted by a lotion composed of a drachm of white vitriol dissolved in eight ounces of rose water. The common people are in the habit of applying to the shingles, writing ink diluted with water. After the eruption is scaled off, the patient should take a few doses of some cooling purgative.

For the erysipelas appearing in children, see *Infantine Erysipelas*.

INFLAMMATION OF THE BRAIN.—PHRENITIS.

This is sometimes a primary disease, but oftener only a symptom of some other malady, as the inflammatory, eruptive, or spotted fever. It is very common, however, as a primary disease in warm climates, and is most incident to persons about the prime or vigor of life. The passionate, the studious, and those whose nervous system is highly irritable are most liable to it.

Causes.—This disease is often occasioned by night-watching, especially when joined with hard study; it may likewise proceed from hard drinking, anger, grief, or anxiety. It is often occasion-

ed by the stoppage of usual evacuations; as the bleeding piles in men, and the customary discharges of women. Such as imprudently expose themselves to the heat of the sun, especially by sleeping without doors in a hot season, with their heads uncovered, are often suddenly seized with inflammation of the brain, so as to awake quite delirious. When repellents are imprudently used in erysipelas, inflammation of the brain is sometimes the consequence. It may likewise be occasioned by external injuries, as blows or bruises upon the head.

Symptoms.—The symptoms which usually precede true inflammation of the brain are, pain of the head; redness and sparkling of the eyes; violent flushing of the face; sometimes nausea and vomiting; disturbed sleep; or total want of it; great dryness of the skin; costiveness; retention of urine; singing of the ears; and extreme sensibility of the nervous system.

When the inflammation is formed, the symptoms in general are similar to those of the inflammatory fever. The pulse, indeed, is often weak, irregular, and trembling; but sometimes it is hard and contracted. When the brain itself is inflamed, the pulse is always soft and low; but when the inflammation only affects the integuments of the brain, viz. the dura and pia matter, it is hard. A remarkable quickness of hearing is a common symptom of this disease: but that seldom continues long. Another usual symptom, is a great throbbing or pulsation in the arteries of the neck and temples. Though the tongue is often black and dry, yet the patient seldom complains of thirst; and even refuses drink. Respiration is hurried and anxious in the beginning, but becomes slow, deep and laborious in the latter stages. The mind chiefly runs upon such subjects as have before made a deep impression on it; and sometimes, from a sullen silence, the patient becomes all of a sudden quite outrageous.

A constant trembling and starting of the tendons is an unfavorable symptom, as are also suppression of urine, total want of sleep, a constant spitting, and grinding of the teeth, which last may be considered as a kind of convulsion. When phrenitis succeeds an inflammation of the lungs, of the intestines, or of the throat, it is owing to a translation of the disease from these parts to the brain, and generally proves fatal. This shows the necessity of proper evacuations, and the danger of repellents in all inflammatory affections.

The favorable symptoms are, a free perspiration, a copious discharge of blood from the nose, the bleeding piles, and a plentiful

discharge of urine, which lets fall a copious sediment. Sometimes the disease is carried off by a diarrhœa, and in women by an excessive flow of the menses.

As this disease often proves fatal in a few days, it requires the most prompt and energetic treatment. When it is prolonged or improperly treated, it sometimes ends in madness, or a kind of stupidity which continues for life.

In the cure, two things are chiefly to be attended to, viz. to lessen the quantity of blood in the brain, and to retard the circulation towards the head.

Regimen.—The patient ought to be kept very quiet. Company, noise, and every thing that affects the senses, or disturbs the imagination, increases the disease. Even too much light is hurtful; for which reason the patient's chamber ought to be a little darkened.

The patient must, as far as possible, be soothed and humored in every thing. Contradiction will ruffle his mind, and increase his malady. Even when he calls for things which are not to be obtained, or which might prove hurtful, he is not to be positively denied them, but rather put off with the promise of having them as soon as they can be procured. A little of any thing that the mind is set upon, though not quite proper, will hurt the patient less than a positive refusal. In a word, whatever he was fond of, or used to be delighted with, when in health, may here be tried; as pleasing stories, soft music, or whatever has a tendency to soothe the passions and compose the mind. Boerhaave proposes several mechanical experiments for this purpose; as the soft noise of water distilling by drops into a bason, and the patient trying to reckon them. Any uniform sound, if low, and continued, has a tendency to procure sleep, and consequently may be of service.

The aliment ought to be panado, and water-gruel, or juice of lemons. The drink whey, barley-water, or decoctions of barley and tamarinds, which latter not only renders the liquor more palatable, but likewise more beneficial, as they are of an opening nature.

Treatment.—[Bloodletting is the only remedy that can be depended on in this disease. The blood should be drawn from a large orifice, and suffered to flow until fainting is induced. When this is neglected, other means will be of no avail. Bleeding should be continued throughout the whole course of the disease when the pulse is tense and quick.]

Bleeding from the temporal arteries greatly relieves the head;

but as this operation cannot always be performed, we would recommend in its stead bleeding in the jugular veins. [Much advantage will often accrue from the application of cups to the temples.]

The hair should be cut short, or shaved off, and linen cloths wetted with vinegar and water, or ice-water, or bags of pounded ice, kept constantly applied to the top of the head. Cold spirituous lotions, or diluted ether may also be applied to the temples and forehead. Some practitioners, however, recommend the application of *tepid* water, in preference to the cold; it should be poured on the head by the hour. At the same time that applications are being made to the head, the feet should be frequently placed in warm water, and to assist in diminishing the determination of blood to the head, the patient should be kept as nearly in the erect posture as can conveniently be borne.

A discharge of blood from the hæmorrhoidal veins is likewise of great service, and ought by all means to be promoted. If the patient has been subject to the bleeding piles, and that discharge has been stopped, every method must be tried to restore it; as the application of leeches to the parts, sitting over the steams of warm water, sharp clysters, or suppositories made of honey, aloes, and rock-salt.

If the inflammation of the brain be occasioned by the stoppage of evacuations either natural or artificial, as the menses, issues, setons, or the like, all means must be used to restore them as soon as possible, or to substitute others in their stead.

The patient's body must be kept open by purges; and small quantities of nitre ought frequently to be mixed with his drink. Two or three drachms, or more, if the case be dangerous, may be used in the space of twenty-four hours. [A combination of twelve grains of the nitrate of potash and half a grain of digitalis, is highly recommended in this disease. The dose may be repeated every two hours.]

The feet ought frequently to be bathed in lukewarm water, and soft poultices of bread and milk may be kept constantly applied to them.

[The next most important remedy to bloodletting, is active purgation. As soon as blood has been drawn to a sufficient extent, an active cathartic, consisting of calomel and jalap, should be administered; and if it does not operate in the usual time, an efficient portion of castor oil should be exhibited. The purgation should be kept up at regular periods until the patient is well; taking care to employ such articles only as produce consistent pas-

sages. Calomel should form a portion of every cathartic, unless danger of salivation occurs, when sulphate of iron must be used in its stead.

The common practice of applying a blister to the crown of the head, is rather injurious than beneficial. It frequently not only adds to the inflammatory symptoms, but also increases the delirium. After inflammation is subdued, a blister applied to the back of the neck or between the shoulders, will always assist materially in eradicating the disease.]

I must again observe, that, though this species of inflammation ought to be treated nearly as other inflammatory disorders are, yet more than ordinary care should be used to keep the patient in a state of as much ease, composure, and tranquillity as possible.

OPHTHALMIA, OR INFLAMMATION OF THE EYES.

THIS disease may be occasioned by external injuries; as blows, burns, bruises, and the like. It may likewise proceed from dust, quick-lime or other substances, getting into the eyes. It is often caused by the stoppage of customary evacuations; as the healing of old sores, drying up of issues, the suppressing of gentle morning sweats, or of the sweating of the feet. Long exposure to the night air, especially in cold northerly winds, or whatever suddenly checks the perspiration, especially after the body has been much heated, is very apt to cause inflammation of the eyes. Viewing snow, or other white bodies, for a long time, or looking steadfastly at the sun, a clear fire, or any bright object, will likewise occasion this malady. A sudden transition from darkness to very bright light will often have the same effect.

Nothing more certainly occasions inflammation of the eyes than night-watching, especially reading or writing by candle-light. Drinking spirituous liquors, and excess of venery, are likewise very hurtful to the eyes. The acrid fumes of metals, and of several kinds of fuel, are also pernicious. Sometimes inflammation of the eyes proceeds from a venereal taint, and often from a scrofulous or gouty habit. It may likewise be occasioned by hairs in the eye-lids turning inwards, and hurting the eyes. Sometimes the disease is epidemic, especially after wet seasons; and I have frequently known it prove infectious, particularly to those who liv-

ed in the same house with the patient. It may be occasioned by moist air, or living in low damp houses, especially in persons who are not accustomed to such situations. In children it often proceeds from imprudently drying up of scabbed heads, a running behind the ears, or any other discharge of that kind. Inflammations of the eyes often succeed the small-pox or measles, especially in children of a scrofulous habit.

Symptoms.—An inflammation of the eyes is attended with acute pain, heat, redness, and swelling. The patient is not able to bear the light, and sometimes he feels a pricking pain, as if his eyes were pierced with a thorn. Sometimes he imagines his eyes are full of motes, or thinks he sees flies dancing before him. The eyes are filled with a scalding rheum, which rushes forth in great quantities, whenever the patient attempts to look up. The pulse is generally quick and hard, with some degree of fever. Where the disease is violent, the neighboring parts swell, and there is a throbbing of the temporal arteries.

A slight inflammation of the eyes, especially from an external cause, is easily cured; but when the disease is violent, and continues long, it often leaves specks upon the eyes, or dimness of sight, and sometimes total blindness.

If the patient be seized with a looseness, it is a good effect; and when the inflammation passes from one eye to another, as it were by infection, it is no unfavorable symptom. But when the disease is accompanied with a violent pain in the head, and continues long, the patient is in danger of losing his sight.

Regimen.—The diet, unless in scrofulous cases, can hardly be too spare. The patient must abstain from every thing of a heating nature. His food should consist chiefly of mild vegetables, and gruels. His drink may be barley-water, balm-tea, and common whey.

The patient's chamber must be darkened, or his eyes shaded by a cover, so as to exclude the light, but not to press upon the eyes.* He should not look at a candle, the fire, or any luminous object; and ought to avoid all smoke, as the fumes of tobacco, or any thing that may cause coughing or sneezing. He should be kept quiet, avoiding all violent efforts, either of body or mind, and encouraging sleep as much as possible.

* The best kind of shade for tender eyes is formed by extending green gauze on wire properly constructed. By this contrivance the access of too much light is effectually impeded, while there is no interruption to the free access of the air, so that the eyes are not heated by this; as by the common shades of silk, or spectacles of green glass.

Treatment.—This is one of those diseases wherein great hurt is often done by external applications. Almost every person pretends to be possessed of a remedy for the cure of sore eyes. These remedies generally consist of eye-waters and ointments, with other external applications, which do mischief twenty times for once they do good. People ought, therefore, to be very cautious how they use such things, as even pressure upon the eyes often increases the malady.

Bleeding, in violent inflammation of the eyes, is always necessary. This should be performed as near the part affected as possible. An adult may lose ten or twelve ounces of blood from the jugular vein, and the operation may be repeated according to the urgency of the symptoms. If it should not be convenient to bleed in the neck, the same quantity may be let from the arm, or any other part of the body.

Leeches are often applied to the temples, or under the eyes, with good effect. The wounds must be suffered to bleed for some hours, and if the bleeding stop soon, it may be promoted by the application of cloths dipt in warm water. In obstinate cases, it will be necessary to repeat this operation several times.

Opening and diluting medicines are by no means to be neglected. The patient at the same time must drink freely of water-gruel, tea, whey, or any other weak diluting liquor. He ought likewise to take, at bed-time, a large draught of very weak wine-whey, in order to promote perspiration. His feet and legs must frequently be bathed in lukewarm water, and his head shaved twice or thrice a-week, and afterwards washed in cold water. This has often a remarkably good effect.

[When the disease arises from atmospheric vicissitudes, it is sometimes called *Catarrhal Ophthalmia*, and may always be distinguished from other forms, by “the intolerance of light, and a constant sensation of sand in the eye.” Bloodletting is rarely called for in this variety of the complaint. Purgatives, however, are indispensably necessary. Active doses of calomel and jalap should be given at first; and afterwards the bowels may be kept open by milder articles of the same class. Great benefit will result from the use of small doses of tartar emetic, given at regular intervals, so as to keep up a continued nausea at the stomach. Cold applications will rather increase the disease, and should never be used. Warm water, to which a little milk may be added, is the best local remedy that can be employed.]

If the inflammation does not yield to these evacuations, blisters

must be applied to the temples, behind the ears, or upon the neck, and kept open for some time by the mild clystering-ointment, or they may be frequently renewed, which is often preferable. I have seldom known these, if long enough kept open, fail to remove the most obstinate inflammation of the eyes; but for this purpose it is often necessary to continue the discharge for several weeks.

For the purpose of allaying heat and inflammation of the eyes, some practitioners give the preference to warm instead of cold collyria; and among this number is Mr. Ware. The fact is, that inflammations of the eyes are known sometimes to yield to cold, and sometimes to warm fomentations. In cases of high irritation the warm may be used; but the alternate use of cold and hot applications has sometimes succeeded when neither of them singly appeared capable of putting an end to the diseased action.

When the disease has been of long standing, I have seen very extraordinary effects from a seton in the neck, or between the shoulders, especially the latter. It should be put upwards and downwards, or in the direction of the spine, and in the middle between the shoulder blades. It may be dressed twice a-day with yellow basilicon. I have known patients, who had been blind for a considerable time, recover sight by means of a seton placed as above. When the seton is put across the neck, it soon wears out, and is both more painful and troublesome than between the shoulders; besides, it leaves a disagreeable mark, and does not discharge so freely.

[In cases of very long standing, great benefit may generally be derived from the use of small doses of tartar emetic and opium. Thirty grains of tartar emetic and ten grains of opium may be united and made into sixty pills; one of which should be taken every two or three hours.]

When the heat and pain of the eyes are very great, a poultice of bread and milk, softened with sweet oil or fresh butter, may be applied to them, at least all night; and they may be bathed with lukewarm milk and water in the morning.

After the inflammation is gone off, if the eyes still remain weak and tender, they may be bathed every night and morning with cold water and a little brandy, six parts of the former to one of the latter. A method should be contrived by which the eye can be quite immersed in the brandy and water, where it should be kept for some time. I have generally found this or cold wa or

and vinegar, as good a strengthener of the eyes as any of the most celebrated collyria.*

If ophthalmia be dependent on a venereal taint, mercury is the remedy to be depended upon for its removal. When it arises in a scrofulous habit, affecting the tarsi, or edges of the eye-lids, and is attended with ulcerations, as is often the case, copious purgation, together with frequent emetics, are imperiously demanded. Calomel, combined with aloes and rhubarb, should be given every day or two in doses sufficiently large to produce active catharsis. Or calomel alone may be given at night, and followed next morning by castor oil. In the acute stage, an emetic of tartar should be given every three or four days. At the same time that the use of these remedies is continued, the edges of the eye-lids may be smeared, morning and night, with a little ointment,† composed of mercury, or the sulphate of zinc.

[The sulphate of quinine has been used with great success in this variety of ophthalmia. Dr. McKenzie says—"In most instances, its effects have been very remarkable; and, indeed, although I have met with a few cases which appeared to resist its beneficial influence, in most of the little patients to whom I have administered it, it acted like a charm. The dose which I employ is generally one grain thrice a day; and in very young children half a grain; and in adults two grains."]

It will be proper frequently to look into the eyes, to see if any hairs be turned inwards, or pressing upon them.‡ These ought to be removed by plucking them out with a pair of small pincers.

Those who are liable to frequent returns of this disease ought constantly to have an issue in one or both arms. Bleeding or purg-

* After the active stage of the inflammation has terminated, and the bloodvessels of the eye appear turgid and relaxed, excellent effects are often found to result from letting a drop or two of the tincture of opium fall into the eye. In this state the eye will bear the application of active stimuli with more advantage than is commonly believed.—In scrofulous inflammation of the eyes, sea-bathing, together with keeping the body open by gentle purgatives of sea-water, are eminently useful. I lately witnessed a case where the aqueous humor of the eye had become so turbid, that the patient, evidently of a scrofulous habit, could hardly distinguish light from darkness, which was almost wholly removed, and sight in great measure restored, by persisting in a course of sea-bathing during the months of summer.

† Take Ointment of the Nitrate of Mercury, Prepared Lard, of each $\frac{1}{2}$ ounce. Make an ointment.	Or, Take Sulphate of Zinc, Prepared Lard, Make an ointment.	1 scruple. 1 ounce.
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‡ Any foreign body lodged in the eye may be expeditiously removed by passing a small hair pencil between the eyelid and the ball of the eye. In some places the people do this very effectually, by using their tongue in the same manner.

ing occasionally, will be very beneficial to such persons. They ought likewise to live with the greatest regularity, avoiding strong liquor, and every thing of a heating quality. Above all, let them avoid the night air and late studies. It may also be necessary, to prevent a return of ophthalmia, to continue the use of blisters behind the ears, or an issue or seton. The cold bath, employed by immersing the whole body, or by washing the head in cold water once or twice a-day, is also a powerful means of prevention. Also the application of cold water to the eyes themselves, or of any astringent collyrium, by means of an eyecup, two or three times a-day, may likewise be serviceable in preventing its return, or removing it after it has become habitual. Tonics have also been adopted with this intention, and with the best effects.

QUINSY.—CYNANCHE TONSILLARIS.

This is a very common disease, and is often attended with much danger. It prevails in winter and spring, and is most fatal to young persons of a sanguine temperament. It consists, generally, in inflammation of the tonsillary glands, but in many cases it extends throughout the whole mucous membrane of the fauces, so as essentially to interrupt the speech, respiration, and deglutition of the patient.

Causes.—Omitting some part of the covering usually worn about the throat; drinking cold fluids when the body is warm; exposure to cold and damp air; standing long on cold and wet ground; sitting with wet feet, or keeping on wet clothes; and sitting in a room that has been newly plastered, or recently washed. The disease has also attacked jovial companions, who, after sitting long in a warm room, drinking hot liquors, and singing with vehemence, were so imprudent as to go abroad in the cold night air. Acrid or irritating food may likewise occasion quinsy. It may also proceed from bones, pins, or other sharp substances sticking in the throat; and from the caustic fumes of metals, as arsenic and antimony, taken in by the breath. This disease sometimes prevails as an epidemic.

Symptoms.—Inflammation of the throat is evident from inspection, the parts appearing red and swollen; besides, the patient complains of pain in swallowing. His pulse is quick and hard, with other symptoms of fever. If blood be drawn, it is generally

covered with a tough coat of a whitish color, and the patient spits a viscid phlegm. As the swelling and inflammation increase, the breathing and swallowing become more difficult; the pain affects the ears; the eyes generally appear red, and the face swells. The patient is often obliged to keep himself in an erect posture, being in danger of suffocation; there is a constant nausea, or inclination to vomit; there is always more difficulty in swallowing liquids than pultaceous or soft solids, and the drink, instead of passing into the stomach, is often returned by the nose. The patient is sometimes starved at last merely from an inability to swallow any kind of food.

When the breathing is laborious, with straitness of the breast and anxiety, the danger is great. Though the pain in swallowing be very great, yet, while the patient breathes easy, there is not so much danger. An external swelling is no unfavorable symptom; but if it suddenly falls, and the disease affects the breast, the danger is very great. When quinsy is the consequence of some other disease, which has already weakened the patient, his situation is dangerous. A frothing at the mouth, with a swelled tongue, a pale, ghastly countenance, and coldness of the extremities, are fatal symptoms.

Regimen.—The regimen in this disease should be in all respects the same as in pleurisy, or peripneumony. The food ought to be light, and in small quantity, and the drink plentiful, weak, and diluting, mixed with acids; although a rigid observance of the antiphlogistic regimen is the most proper.

It is highly necessary that the patient be kept easy and quiet. Violent affections of the mind, or great efforts of the body, may prove fatal. He should not even attempt to speak but in a low voice. Such a degree of warmth as to promote a constant, gentle perspiration, is proper. When the patient is in bed, his head ought to be raised a little higher than usual.

It is peculiarly necessary that the neck be kept warm: for which purpose several folds of soft flannel may be wrapt round it. That alone will often remove a slight complaint of the throat, especially if applied in due time. We cannot here omit observing the propriety of a custom which prevails among the peasants in Scotland. When they feel any uneasiness of the throat, they wrap a stocking about it all night. So effectual is this remedy, that in many places it passes for a charm, and the stocking is applied with particular ceremonies: the custom, however, is undoubtedly a good one, and should never be neglected. When the throat has been

thus wrapped up all night, it must not be exposed to the cold air through the day, but a handkerchief, or a piece of flannel, kept about it till the inflammation be removed.

The jelly of black currants is a medicine very much in esteem for complaints of the throat; it should be almost constantly kept in the mouth, and swallowed down leisurely. It may likewise be mixed in the patient's drink, or taken any other way. When it cannot be obtained, the jelly of red currants, or of mulberries, may be used in its stead.

There is no disease in which the benefit of bathing the feet and legs in lukewarm water is more apparent: that practice ought, therefore, never to be neglected. If people were careful to keep warm, to wrap up their throats with flannel, to bathe their feet and legs in warm water, and to use a spare diet, with diluting liquors, at the beginning of this disease, it would seldom proceed to a great height, or be attended with any danger; but when these precautions are neglected, and the disease becomes violent, more powerful medicines are necessary.

Treatment.—An inflammation of the throat being a most acute and dangerous disease, which sometimes takes off the patient very suddenly, it will be proper, as soon as the symptoms appear, to bleed in the arm, or rather in the jugular vein, and to repeat the operation if circumstances require.

The body should likewise be kept gently open. This may either be done by giving the patient saline aperients, or small doses of aloes, rhubarb, and nitre. These may be increased according to the age of the patient, and repeated till they have the desired effect.

I have often known very good effects from a bit of *sal prunel*, or purified nitre, held in the mouth and swallowed down as it melted. This promotes the discharge of *saliva*, by which means it answers the end of a gargle, while at the same time it abates the fever, by promoting the discharge of urine.

At the commencement of inflammatory sore throat, and before the febrile symptoms have become violent, an emetic is often of great benefit, and not unfrequently checks its formation.

The throat ought likewise to be rubbed twice or thrice a-day with a little of the volatile liniment. This seldom fails to produce good effects. At the same time the neck ought to be carefully covered with wool or flannel, to prevent the cold from penetrating the skin, as this application renders it very tender.

When white sloughy specks appear in the throat, the gargles advised in putrid sore throat may be used.

Some recommend the gum-guaiacum as a specific in this disease. Half a drachm of the gum in powder may be made into an electuary with the rob of elderberries, or the jelly of currants, for a dose, and repeated occasionally.

Blistering upon the neck, or behind the ears, in violent inflammations of the throat, is very beneficial; and in bad cases, it will be necessary to lay a blister quite across the throat, so as to reach from one ear to the other ear. After the plasters are taken off, the parts ought to be kept discharging by the application of issue ointment, till the inflammation is gone; otherwise, upon their drying up, the patient will be in danger of a relapse.

When the patient has been treated as above, suppuration seldom happens. This, however, is sometimes the case, in spite of all endeavors to prevent it. When the inflammation and swelling continue, and it is evident that suppuration will ensue, it ought to be promoted by drawing the steam of warm water into the throat through a funnel. Soft poultices ought likewise to be applied outwardly.

Not only the swallowing, but the breathing is often prevented by the tumor. In this case nothing can save the patient's life, but opening the *trachea* or windpipe. As that has been often done with success, no person, in such desperate circumstances, ought to hesitate a moment about the operation; but as it can only be performed by a surgeon, it is not necessary here to give any directions about it.

When difficulty of swallowing is not attended with acute pain, it is generally owing to an obstruction of the glands about the throat, and only requires that the part be kept warm, and the throat frequently gargled with something that may gently stimulate the glands, as a decoction of figs with vinegar and honey; to which may be added a little mustard, or a small quantity of spirits. But this gargle is never to be used where there are signs of inflammation. This species of *angina* has various names among the common people, as *the pap of the throat*, the falling down of the *almonds of the ears*, &c. Accordingly, to remove it, they lift the patient up by the hair of the head, and thrust their fingers under his jaws, which practices are at best useless, and often hurtful.

Those who are subject to inflammation of the throat, in order to avoid that disease, ought to live temperate. They ought likewise to beware of catching cold, and should abstain from aliment and medicines of an astringent or stimulating nature. Violent exercise is apt to occasion inflammation of the throat, especially if

cold liquor be drank immediately after it, or the body suffered suddenly to cool. Those who would avoid this disease ought, therefore, after speaking aloud, singing, running, drinking warm liquor, or doing any thing that may strain the throat, or increase the circulation of the blood towards it, to take care to cool gradually, and to wrap some additional covering about their necks.

I have often known persons who had been subject to sore throats, entirely freed from that complaint by only wearing a riband, or a bit of flannel, constantly about their necks. These may seem trifling, but they have great effect. There is danger indeed in leaving them off after persons have been accustomed to them; but surely the inconvenience of using such things for life, is not to be compared with the danger which may attend the neglect of them.

Sometimes, after an inflammation, the glands of the throat continue swollen, and become hard and callous. This complaint is not easily removed, and is often rendered dangerous by the too frequent application of stimulating and styptic medicines. The best method is to keep it warm, and to gargle it twice a-day with a decoction of figs, sharpened a little with diluted sulphuric acid.

PUTRID SORE THROAT—CYNANCHE MALIGNA.

This is nothing more than a high grade of the preceding disease. Children, females, and persons of a feeble, delicate habit of body, are most liable to it. It prevails chiefly in autumn, and is most frequent after a long course of damp, sultry weather. It is readily distinguished from the inflammatory quinsy by the aphthæ or white specks which appear in the fauces.

Symptoms.—It begins with alternate fits of shivering and heat. The pulse is quick, but low and unequal, and generally continues so through the whole course of the disease. The patient complains greatly of weakness and oppression of the breast; his spirits are low, and he is apt to faint away when set upright; he is troubled with nausea, and often with vomiting or purging. The two latter are most common in children. The eyes appear red and watery, and the face swells. The urine is at first pale and crude; but, as the disease advances, it turns more of a yellowish color. The tongue is white, and generally moist. Upon looking

into the throat, it appears swollen, and of a florid red color. Pale or ash-colored spots, however, are here and there interspersed, and sometimes one broad patch or spot, of an irregular figure, and pale white color, surrounded with florid red, only appears. These whitish spots or sloughs cover so many ulcers.

An efflorescence, or eruption upon the neck, arms, breast, and fingers, about the second or third day, is a common symptom of this disease. When it appears, the purging and vomiting generally cease.

There is often a slight degree of delirium, and the face frequently appears bloated, and the inside of the nostrils red and inflamed. The patient complains of a disagreeable putrid smell, and his breath is very offensive.

The putrid, ulcerous sore throat may be distinguished from the inflammatory, by the vomiting and looseness with which it is generally ushered in; the foul ulcers in the throat covered with a white or livid coat; and by the excessive weakness of the patient; with other symptoms of typhus fever.

Unfavorable symptoms are, an obstinate purging, extreme weakness, dimness of sight, a livid or black color of the spots, and frequent shiverings, with a weak, fluttering pulse. If the eruption upon the skin suddenly disappears, or becomes of a livid color, with a discharge of blood from the nose or mouth, the danger is very great.

If a gentle sweat break out about the third, or fourth day, and continue with a slow, firm, and equal pulse; if the sloughs cast off in a kindly manner, and appear clean and florid at the bottom; and if the breathing is soft and free, with a lively color of the eyes, there is reason to hope for a salutary crisis.

Treatment.—The treatment of this disease differs essentially from that which is proper in the inflammatory form. All evacuations, as bleeding and purging, which are calculated to debilitate the patient, must be avoided. An emetic of ipecacuanha, in the beginning of the disease, followed by a dose of calomel, will always be of advantage. If the skin be hot and dry, the affusion of cold water may be resorted to, as directed in scarlet fever.

If the disease be mild, the throat may be gargled with an infusion of sage and rose leaves, to a gill of which may be added a spoonful or two of honey, and as much vinegar as will make it agreeably acid; but when the symptoms are urgent, the sloughs large and thick, and the breath very offensive, the following, or similar gargles may be used :

Take Decoction of P. Bark, six ounces.
 Muriatic Acid, one drachm.
 Compound Tinct. of Cinnamon, half an ounce.
 Tincture of Myrrh, one ounce.

Make a gargle; or

Take Honey of Roses, one ounce.
 Barley Water, ten ounces.
 Tincture of Myrrh, half an ounce.
 Vinegar, one ounce.

Mix, and make a gargle.

To six or seven ounces of the pectoral decoction, when boiling, add half an ounce of contrayerva root; let it boil for some time, and afterwards strain the liquor; to which add two ounces of white wine vinegar, an ounce of fine honey, and an ounce of the tincture of myrrh. This ought not only to be used as a gargle, but a little of it should frequently be injected with a syringe to clean the throat. This method is peculiarly necessary for children, who cannot use a gargle. No degree of force, however, is to be used to effect a separation of the sloughs; and if after a continuation of the gargles for some time, the sloughs should not begin to separate, all that can safely be done is to touch them with a little alum, or the muriatic acid mixed with honey, and applied by means of a piece of lint, or a hair pencil.

It will be of great benefit if the patient frequently receives into his mouth, through an inverted funnel, the steams of warm vinegar, myrrh, and honey.

Blisters are very beneficial in this disease, especially when the pulse is low. They may be applied to the throat, behind the ears, or upon the back part of the neck.

Should the vomiting prove troublesome, it will be proper to give the patient two table-spoonsful of the saline mixture in a state of effervescence, and cloths wetted in tincture of opium may be applied to the pit of the stomach. Mint tea and a little cinnamon will be very proper for the ordinary drink, especially if an equal quantity of red wine be mixed with it.

If diarrhœa should arise, every means must be adopted to put an immediate stop to it, as at all periods of this disease, diarrhœa is a very dangerous symptom.

If bleeding from the nose occur, the steam of warm vinegar may be frequently inhaled up the nostrils, and the drink be sharpened with sulphuric acid.

[The tea made of red pepper, salt and vinegar, mentioned under the head of scarlet fever, is one of the best gargles that can be used in this disease; and when the typhoid symptoms are con-

spicuous, a tablespoonful taken into the stomach every hour will be of great benefit.]

In case of a strangury, the belly must be fomented with warm water, and emollient clysters given three or four times a-day. After the violence of the disease is over, the body should still be kept open with mild purgatives.

The regimen recommended in typhus fever is also proper in this disease. It should be mild and unirritating, but at the same time cordial and nourishing.

The quinsy, being a local disease, is generally caught by exposing the throat to a draught of cold air. I know many people, who are sure to be troubled with this complaint if they stand or sit near an open window, or continue for any length of time in a room lately washed. There is not a readier or more certain way to catch a quinsy, than sitting near an open window in a carriage, especially during the night, or when the weather is cold or damp.

The inflammatory sore throat, though it sometimes comes to a suppuration, generally yields to the method of treatment recommended in this chapter. Cases, however, occur, where the power of swallowing is lost, and the patient perishes from the mere want of sustenance. I lately saw a very ingenious invention of a young surgeon, by which a man's life was saved in a case of this kind. He fastened a funnel to the skin of an eel, open at both ends; and, by means of a flexible probe, pushed one end down the gullet, till it entered the stomach. Afterwards, milk, broth, or whatever was deemed proper for nourishing the patient, was put into the funnel, and conveyed to the stomach. Though I mention this chiefly with a view of directing others in the like alarming situations, yet it may also serve to confirm an opinion, often avowed by the late John Hunter, and well illustrated in his own practice, that presence of mind, and a readiness or fertility of mechanical contrivance, may sometimes prove more serviceable in a critical moment, than all the resources of science.

But the most dangerous kind of quinsy, as I before observed, is that attended with typhoid fever, commonly called the malignant quinsy, or putrid ulcerous sore throat. Whenever the symptoms of this appear, I cannot too urgently advise the patient's friends to lose no time in procuring for him the best medical assistance they can obtain. The delay of an hour may be attended with irreparable injury.

MUMPS.—CYNANCHE PAROTIDÆA.

THE mumps is a swelling of the glands about the throat, which is occasionally observed to be epidemic in certain districts of this country. This disease generally makes its appearance in spring, and young persons of both sexes are much more liable to be attacked by it than those farther advanced in life. It is preceded by heaviness, lassitude, and a general sensation of uneasiness, which continue for several days. Stiffness, pain, and difficulty of motion, is then perceived about the articulation of the lower jaw. A swelling of the glands situated under the jaws, and diffused over the neck, next takes place, which sometimes increases to so enormous a magnitude, as greatly to disfigure the countenance. There is a good deal of fever, as indicated by the increased frequency of the pulse. About the fourth day from the commencement of the tumefaction, the disease is at its height. A gentle moisture then begins to exude from the surface of the swelling, accompanied with general perspiration of the whole body, which, if it be encouraged by keeping warm in bed, and drinking diluent fluids, appears to form the natural crisis of the disease, and the whole terminates favorably about the sixth day.

But if, from exposure to cold, or improper management, this natural process of the disease be interrupted, a singular translation of the morbid action takes place. The tumors about the throat suddenly subside, and are followed by swellings of the testicles in the male sex, and of the breasts in the female, accompanied with a fresh exacerbation of the fever. If the swellings of these parts be imprudently checked by exposure to cold, or if they suddenly subside, the brain is apt to become affected, occasioning convulsions, delirium, and other dreadful symptoms, which finally terminate in death.

[When the mumps are attended with great febrile excitement, it will be necessary to bleed to the extent of reducing the pulse and moderating the fever. If the bowels are torpid, mild cathartics should be exhibited sufficiently often to keep up a regular action.]

The patient ought to keep warm in bed, and encourage perspiration, by drinking plentifully of diluting liquors, such as mint-whew, or balm-tea, with a few drops of spirit of hartshorn. The effort of nature to resolve the tumors by exudation, should be promoted by covering the parts with soft flannel. If the swellings show a disposition to subside too early, they should be covered with blistering plasters, or rubbed with the volatile liniment.

Should the tumor, when seated in the testicles, suddenly subside, and any tendency to delirium manifest itself, the whole scrotum ought, without delay, to be enveloped in a blistering cataplasm, which is made by sprinkling a little of the powder of Spanish flies over the surface of the common poultice. By this means the disease may be arrested in the part occupied by it, and the dangerous consequences of its falling on the brain prevented.

It is not an uncommon sequel of this complaint to find sometimes one and sometimes both testicles, after the inflammation has ceased, gradually shrink in size, and finally wither wholly away. The mumps is decidedly an infectious disease, but there is rarely an instance of a person being attacked by it a second time.

COLDS AND COUGHS.—CATARRHAL AFFECTIONS.

It has already been observed, that colds are the effect of obstructed perspiration; the common causes of which we have likewise endeavored to point out, and shall not here repeat them. Neither shall we spend time in enumerating all the various symptoms of colds, as they are pretty generally known. It may not, however, be amiss to observe, that almost every cold is a kind of fever, which only differs in degree from some of those that have already been treated of.

No age, sex, or constitution, is exempted from this disease; neither is it in the power of any medicine or regimen to prevent it. The inhabitants of every climate are liable to catch cold, nor can even the greatest circumspection defend them at all times from its attacks. Indeed, if the human body could be kept constantly in an uniform degree of warmth, such a thing as catching cold would be impossible: but as that cannot be effected by any means, the perspiration must be liable to many changes. Such changes, however, when small, do not affect the health; but when great, they prove hurtful.

When oppression of the breast, a stuffing of the nose, unusual weariness, or pain of the head, give ground to believe that the perspiration is obstructed, or in other words that the person has caught cold, he ought immediately to lessen his diet, at least the usual quantity of his solid food, and to abstain from all strong

liquors. Instead of flesh, fish, eggs, milk, and other nourishing diet, he may eat light bread-pudding, veal or chicken broth, panado, gruels, and such like. His drink may be water-gruel sweetened with a little honey; an infusion of balm or linseed sharpened with the juice of bitter orange or lemon; a decoction of barley and liquorice with tamarinds, or any other cool, diluting, acid liquor.

Above all, his supper should be light; as water-gruel, sweetened with honey, and a little toasted bread in it. If honey should disagree with the stomach, the gruel may be sweetened with treacle or coarse sugar, and sharpened with the jelly of currants.

The patient ought to lie longer than usual in bed, and to encourage a gentle sweat, which is easily brought on towards morning by drinking tea, or any kind of warm diluting liquor. I have often known this practice carry off a cold in one day, which in all probability, had it been neglected, would have cost the patient his life, or have confined him for some months. Would people sacrifice a little time to ease and warmth, and practise a moderate degree of abstinence when the first symptoms appear, we have reason to believe that most of the bad effects which flow from an obstructed perspiration might be prevented. But, after the disease has gathered strength by delay, all attempts to remove it often prove vain. Pleurisy, peripneumony, or a fatal consumption of the lungs, are the common effects of colds which have either been totally neglected, or treated improperly.

Many attempt to cure a cold, by getting drunk: but this, to say no worse of it, is a very hazardous experiment. No doubt it may sometimes succeed, by suddenly restoring the perspiration; but when there is any degree of inflammation, which is frequently the case, strong liquors, instead of removing the malady, will increase it. By this means a common cold may be converted into an inflammatory fever.

When those who labor for their daily bread have the misfortune to catch cold, they cannot afford to lose a day or two, in order to keep themselves warm and take medicine; by which means the disorder is often so aggravated as to confine them for a long time, or to render them ever after unable to sustain hard labor. But even those who can afford to take care of themselves, are often too hardy to do it; they affect to despise colds, and as long as they can crawl about, scorn to be confined by what they call a *common cold*. Hence it is that colds destroy such numbers of mankind. Like an enemy despised, they gather strength from delay, till at length they become invincible. We often see this verified in tra-

vellers, who, rather than lose a day in the prosecution of their business, throw away their lives by pursuing their journey, even in the severest weather, with this disease upon them.

It is certain, however, that colds may be too much indulged. When a person, for every slight cold, shuts himself up in a warm room, and drinks great quantities of warm liquor, it may occasion such a general relaxation of the solids as will not easily be removed. It will, therefore, be proper, when the disease will permit, and the weather is mild, to join to the regimen mentioned above, gentle exercise; as walking, or riding on horseback. An obstinate cold, which no medicine can remove, will yield to gentle exercise and proper diet.

Bathing the feet and legs in warm water has a great tendency to restore the perspiration. But care must be taken that the water be not too warm, otherwise it will do hurt. It should never be much warmer than the blood, and the patient should go immediately to bed after using it. Bathing the feet in warm water, lying in bed, and drinking warm water-gruel, or other weak liquors, will sooner restore perspiration, than all the hot sudorific medicines in the world. This is all that is necessary for removing a common cold; and if this course be taken at the beginning, it will seldom fail.

But when the symptoms do not yield to abstinence, warmth, and diluting liquors, there is reason to fear the approach of some other disease. If the pulse, therefore, be hard and frequent, the skin hot and dry, and the patient complains of his head or breast, it will be necessary to bleed, and give such medicines as are calculated to keep up the action of the liver, and evacuate the contents of the bowels. Cooke's or Lee's pills answer this purpose very well.

It will be proper in short to treat the patient in all respects as for a slight fever. I have often seen this course, when observed at the beginning, remove the complaint in two or three days, when the patient had all the symptoms of an approaching fever, or inflammation of the breast.

[The colds which occur in every part of our climate, if they assume any degree of violence, are difficult of cure, and require for their management the most energetic and decisive treatment. The lancet, purgatives and emetics, are the means to be employed. The quantity of blood to be drawn at one time, as well as the propriety of repeating the operation, depend on the state of the pulse, and other circumstances, in each particular case. As a general

rule, however, a single bleeding, if copious, will be sufficient. It is a general practice among physicians to treat catarrh, after venesection, with the antimonial preparations, with a view to their nauseating properties; but effects infinitely more decisive and beneficial, are produced by emetics, given so as to produce full vomiting. Exhibited early in the disease, there are few cases, however violent, which would not be entirely removed or much mitigated by the use of emetics. When the disease is far advanced, or inflammatory symptoms are present, emetics are contra-indicated.

Blisters may frequently be directed with advantage in catarrh, but much injury is often done by applying them too early. In the declining stage, when there is a hard, lingering cough, attended by much pain about the chest, blisters may be resorted to with unequivocal utility.

As a means of promoting expectoration, after the disease is broken, and allaying the irritation which causes cough, the following prescription may be used, with as much prospect of success as any other:

Take	Extract of Liquorice, three drachms, Warm Water, four ounces, Effect a solution in a mortar;
Then add	Sweet Spirits of Nitre, two drachms, Antimonial Wine, one drachm, Laudanum, forty drops.

Of this mixture, the dose is a table-spoonful every two or three hours, according to circumstances.]

The chief secret in preventing colds lies in avoiding, as far as possible, all extremes either of heat or cold, and in taking care, when the body is heated, to let it cool gradually. These and other circumstances relating to this important subject, are so fully treated of under the article *Obstructed Perspiration*, that it is needless here to resume the consideration of them.

OF A COMMON COUGH.

A cough is generally the effect of a cold, which has either been improperly treated, or entirely neglected. When it proves obstinate, there is always reason to fear the consequences, as this shows a weak state of the lungs, and is often the forerunner of consumption.

If the cough be violent, and the patient young and strong, with a hard quick pulse, bleeding will be proper; but in weak and relaxed habits, bleeding rather prolongs the disease. When the pa-

tient spits freely, bleeding is unnecessary, and sometimes hurtful, as it tends to lessen that discharge.

When the cough is not attended with any degree of fever, and the spittle is viscid and tough, pectoral medicines are to be administered; as gum-ammoniac, squills, &c. Two table-spoonsful of the solution of gum-ammoniac may be taken three or four times a-day, more or less, according to the age and constitution of the patient. Squills may be given in various ways: two ounces of the vinegar, the oxymel, or the syrup, may be mixed with the same quantity of simple cinnamon-water, to which may be added an ounce of common water and an ounce of balsamic syrup. Two table-spoonsful of this mixture may be taken three or four times a-day.

[The following formula is in very common use, and combines as many advantages as any other preparation:—

Take	Oxymel or vinegar of squills, one ounce.
	Antimonial wine, one drachm.
	Sweet spirits of nitre, two drachms.
	Gum arabic, in powder, two drachms.
	Laudanum, forty drops.
	Water, four ounces.

Mix.—Dose, a table-spoonful every two or three hours.]

A syrup made of equal parts of lemon-juice, honey, and sugar-candy, is likewise very proper in this kind of cough. A table-spoonful of it may be taken at pleasure.

But when the defluxion is sharp and thin, these medicines rather do hurt. In this case, gentle opiates, combined with diaphoretics, oils, and mucilages, are more proper. A cup of an infusion of poppy leaves, and marsh-mallow roots, or the flowers of colts-foot, may be taken frequently; or a tea-spoonful of paregoric elixir may be put into the patient's drink twice a-day. Fuller's Spanish infusion is also a very proper medicine in this case, and may be taken in the quantity of a tea-cupful three or four times a-day.

In obstinate coughs it will often be necessary, besides expectorating medicines, to have recourse to issues, setons, or some other drain. In this case I have often observed the most happy effects from a Burgundy-pitch plaster applied between the shoulders. I have ordered this simple remedy in the most obstinate coughs, in a great number of cases, and in many different constitutions, without ever knowing it fail to give relief, unless there were evident signs of an ulcer in the lungs.

About the bulk of a nutmeg of Burgundy-pitch may be spread thin upon a piece of soft leather, about the size of the hand, and laid between the shoulder-blades. It may be taken off and wiped

every three or four days, and ought to be renewed once a fortnight or three weeks. This is indeed a cheap and simple medicine, and consequently apt to be despised; but we will venture to affirm, that the whole *materia medica* does not afford an application more efficacious in almost every kind of cough. It has not indeed always an immediate effect; but, if kept on for some time, it will succeed where most other medicines fail.

The only inconvenience attending this plaster is the itching which it occasions; but surely this may be dispensed with, considering the advantage which the patient may expect to reap from the application; besides, when the itching becomes very uneasy, the plaster may be taken off, and the part rubbed with a dry cloth, or washed with a little warm milk and water. Some caution indeed is necessary in discontinuing the use of such a plaster; this however, may be safely done by making it smaller by degrees, and at length quitting it altogether in a warm season.*

But coughs proceed from many other causes besides defluxions upon the lungs. In these cases the cure is not to be attempted by pectoral medicines. Thus, in a cough proceeding from foulness and debility of the stomach, syrups, oils, mucilages, and all kinds of balsams do hurt. The *stomach cough* may be known from one that is owing to a fault in the lungs by this, that in the latter the patient coughs whenever he inspires, or draws in his breath fully; but in the former that does not happen.

The cure of this cough depends chiefly upon cleansing and strengthening the stomach; for which purpose, gentle emetics and bitter purgatives are most proper. In the state of the stomach productive of this particular kind of cough, beneficial effects are derived from small doses of ipecacuanha. A person may begin with taking one grain at noon, and another at night, gradually augmenting the dose till it occasions some degree of nausea.

A *nervous cough* can only be removed by change of air, and proper exercise; to which may be added the use of gentle opiates. Instead of the saponaceous pill, the pectoric elixir, &c. which are only opium disguised, ten, fifteen, twenty, twenty-five drops of liquid laudanum, more or less, as circumstances require, may be taken at bed-time, or when the cough is most troublesome. Im-

* Some complain that the pitch plaster adheres too fast, while others find difficulty in keeping it on. This proceeds from the different kinds of pitch made use of, and likewise from the manner of making it. I generally find it answer best when mixed with a little beeswax, and spread as cool as possible. The clear, hard, transparent pitch answers the purpose best.

mersing the feet and hands in warm water will often appease the violence of a nervous cough.

When a cough is only a symptom of some other malady, it is in vain to attempt to remove it without first curing the disease from which it proceeds. Thus, when a cough is occasioned by *teething*, keeping the body open, scarifying the gums, or whatever facilitates the cutting of the teeth, likewise appeases the cough. In like manner, when *worms* occasion a cough, such medicines as remove these vermin will generally cure the cough.

Women, during the last month of pregnancy are often greatly afflicted with a cough, which is generally relieved by bleeding, and keeping the body gently open. They ought to avoid all flatulent food, and wear a loose, easy dress.

A cough is not only a symptom, but is often likewise the forerunner of diseases. Thus, the gout is frequently ushered in by a very troublesome cough, which affects the patient for some days before the coming on of the fit. This cough is generally removed by a paroxysm of the gout, which should therefore be promoted, by keeping the extremities warm, drinking warm liquors, and bathing the feet and legs frequently in lukewarm water.

WHOOPIING-COUGH, OR CHIN-COUGH.—PERTUSSIS.

This cough seldom affects adults, but often proves fatal to children. Such children as live upon thin watery diet, who breathe unwholesome air, and have too little exercise, are most liable to this disease, and generally suffer most from it.

The chin-cough is so well known, even to nurses, that description of it is unnecessary. Whatever impairs digestion, obstructs the perspiration, or relaxes the solids, disposes to this disease; consequently its cure must depend upon cleansing and strengthening the stomach, bracing the solids, and at the same time promoting perspiration, and the different secretions.

The diet must be light, and of easy digestion; for children, good bread made into pap or pudding, chicken-broth, with other light spoon-meats, are proper; but those who are farther advanced may be allowed sago-gruel, and if the fever be not high, a little boiled chicken, or other white meats. The drink may be hyssop, or penny-royal tea, sweetened with honey or sugar-candy.

One of the most effectual remedies in the chin-cough is change of air. This often removes the malady, even when the change

seems to be from a purer to a less wholesome atmosphere. This may in some measure depend on the patient's being removed from the place where the infection prevails. Many of the diseases of children are infectious; nor is it at all uncommon to find the chin-cough prevailing in one town or village, when another at a very small distance is quite free from it. But whatever be the cause, we are sure of the fact. No time ought therefore to be lost in removing the patient at some distance from the place where he caught the disease, and, if possible, into a more pure and warm air.*

When the disease proves violent, and the patient is in danger of being suffocated by the cough, he ought to be bled, especially if there be a fever with a hard full pulse. But as the chief intention of bleeding is to prevent inflammation of the lungs, and to render it more safe to give vomits, it will seldom be necessary to repeat the operation, yet if there are symptoms of an inflammation of the lungs, a second or even a third bleeding may be requisite.

It is generally reckoned a favorable symptom when a fit of coughing makes the patient vomit. This cleanses the stomach, and greatly relieves the cough. It will therefore be proper to promote this discharge, either by small doses of ipecacuanha, or the emetic mixture here subjoined in doses of a table-spoonful every fifteen minutes till it operates.

Take	Tartarized antimony, three grains.
	Water, six ounces.
	Simple syrup, two drachms.

Make a mixture, to be taken as above.

Emetics not only cleanse the stomach, which in this disease is generally loaded with viscid phlegm, but they likewise promote the perspiration and other secretions, and ought therefore to be repeated according to the obstinacy of the disease. They should not however be strong; gentle vomits frequently repeated are both less dangerous and more beneficial than strong ones.

The body ought to be kept gently open. The best medicines for this purpose are rhubarb and its preparations, as the syrup, tincture, or submuriate of mercury and rhubarb. Of the former a tea-spoonful or two may be given to an infant, twice or thrice a-day, as there is occasion. To such as are farther advanced, the dose

* Some think the air ought not to be changed till the disease is on the decline; but there seems to be no sufficient reason for this opinion, as patients have been known to reap benefit from a change of air at all periods of the disease. It is not sufficient to take the patient out daily in a carriage. This seldom answers any good purpose; but often does hurt, by giving him cold.

must be proportionally increased, and repeated till it has the desired effect.

Many people believe that oily, pectoral, and balsamic medicines possess wonderful virtues for the cure of the whooping-cough, and accordingly exhibit them plentifully to patients of every age and constitution, without considering that every thing of this nature must load the stomach, impair digestion, and of course aggravate the disorder.*

Opiates are sometimes necessary to allay the violence of the cough. For this purpose, a little of the syrup of poppies, or five, six, or seven drops of laudanum, according to the age of the patient, may be taken in a cup of hyssop or penny-royal tea, and repeated occasionally, or as hemlock has been recommended; they may be combined in the following form.

Take	Extract of hemlock, one to two grains.
	Decoction of bark, one ounce.
	Tincture of opium, three drops.

Make a draught, to be taken three times a-day.

After the accumulated phlegm has been brought away by emetics, Dr. Pearson recommends a medicine composed of opium, ipecacuanha, and the carbonate of soda; in the subjoined proportions to a child between one and three years old, to be repeated every fourth hour, for several days, taking care to remove costiveness whenever it may occur, by submuriate of mercury and rhubarb, (one grain of the former to four of the latter.)

Take	Wine of ipecacuanha, five drops.
	Carbonate of Soda, three grains.
	Laudanum, one drop.
	Water, one drachm.
	Simple syrup, one drachm.

Mix, and make a draught.

Stimulating or anodyne embrocations frequently afford relief; and may be rubbed along the spine, breast bone, or lower region of the stomach, and opium rubbed over the stomach and chest.

Young children should be laid with their heads and shoulders raised, and should be cautiously watched, that, when the cough comes on, they may be held up, so as to stand upon their feet, bending a little forward to guard against suffocation.

The feet should be frequently bathed in lukewarm water; and

* Dr. Duplanil says, he has seen many good effects from the kermes mineral in this complaint, the cough being frequently alleviated even by the first dose. The dose for a child of one year old is a quarter of a grain dissolved in a cup of any liquid, repeated two or three times a-day. For a child of two years, the dose is half a grain; and the quantity must be thus increased in proportion to the age of the patient.

a burgundy-pitch plaster kept constantly between the shoulders. But when the disease proves very violent, it will be necessary, instead of it, to apply a blistering-plaster, and to keep the part open for some time with issue-ointment.

[In 1827, Dr. Kahleiss published a memoir on the efficacy of a mixture of belladonna, ipecacuanha, and sulphur, in the treatment of whooping-cough. He treated largely upwards of one hundred cases with perfect success; and the experience of other physicians since that time have confirmed the efficacy of the course pursued by him. The treatment of Dr. K. consists in the use of the following formulæ :

Take	Powdered root of belladonna, one and a quarter grains.
	Precipitated sulphur, twenty grains.
	Dover's powder, three grains.
	White sugar, two scruples.

Mix—and divide into twenty powders; one to be taken every three hours; and between each dose, twelve drops of the following mixture :—

Take	Infusion of camomile, half an ounce.
	Simple syrup, two drachms.
	Prussic acid, six drops.

The proportion of the articles in these prescriptions ought to be increased or diminished according to the age and temperament of the child. Dr. K. says, that sometimes the effects of these remedies do not manifest themselves for five or six days : but then they become very evident, and generally in from eight to twelve days at furthest the cure is complete. In some cases, after the employment of these remedies for two or three days, a red efflorescence of the skin appears, and a greater or less considerable dilatation of the pupils. In this case the treatment must be suspended for twenty-four or thirty-six hours, and the proportion of belladonna diminished.]

INFLAMMATION OF THE STOMACH.—GASTRITIS.

THIS disease is divided into two species, viz. the phlegmonous and erysipelatous; but it is the former that is here alluded to, the latter arising, for the most part, towards the termination of other diseases, marking the certain approach to dissolution, and being unaccompanied with any marks of general inflammation, or by any burning pain in the stomach.

Inflammations of the stomach are dangerous, and require the most speedy assistance, as they frequently end in suppuration, and sometimes in mortification, which is certain death.

Causes.—Phlegmonous Inflammation of the stomach may proceed from any of the causes which produce an inflammatory fever; as cold liquor drank while the body is warm, obstructed perspiration, or the sudden striking-in of any eruption. It may likewise proceed from acrid and stimulating substances taken into the stomach; as strong vomits or purges, corrosive poisons, and such like. When the gout has been repelled from the extremities, either by cold or improper applications, it often occasions inflammation of the stomach. Hard or indigestible substances taken into the stomach, as bones, the stones of fruit, &c. may likewise have that effect.

Symptoms.—It is attended with a fixed pain and burning heat in the stomach; great restlessness and anxiety; a small, quick, and hard pulse; vomiting, or at least nausea and sickness; excessive thirst; coldness of the extremities; difficulty of breathing; cold clammy sweats; and sometimes convulsions and fainting fits. The stomach is swelled, and often feels hard to the touch. One of the most certain signs of this disease is the sense of pain, which the patient feels upon taking any kind of food or drink, especially if it be either too hot or too cold.

When the patient vomits every thing he eats or drinks, is extremely restless, has a hiccough, with an intermitting pulse, and frequent fainting fits, the danger is very great.

Regimen.—All acrimonious, heating, and irritating food and drink are carefully to be avoided. The weakness of the patient may deceive the by-standers, and induce them to give him wines, spirits, or other cordials; but these never fail to increase the disease, and often occasion sudden death. The inclination to vomit may likewise impose on the attendants, and make them think a vomit necessary; but that too is almost certain death.

The food must be light, thin, cool, and easy of digestion. It must be given in small quantities, and should neither be quite cold nor too hot. Thin gruel made of barley or oatmeal, light toasted bread dissolved in boiling water, or very weak chicken broth, are the most proper. The drink should be clear whey, barley-water, water in which toasted bread has been boiled, or decoctions of emollient vegetables, as liquorice, and marshmallow roots, sarsaparilla or the like.

Treatment.—Bleeding in this disease, as in all other visceral inflammations, is the sheet anchor, and the only thing that can be

depended on. When the disease proves obstinate, it will often be proper to repeat this operation several times; nor must the low state of the pulse deter us from doing so. The pulse, indeed, generally rises upon bleeding, and as long as that is the case, the operation is safe.

Frequent fomentations with lukewarm water, or a decoction of emollient vegetables, are likewise beneficial. Flannel cloths dipped in these must be applied to the region of the stomach, and removed as they grow cool. They must neither be applied too warm, nor be suffered to continue until they become quite cold, as either of these extremes would aggravate the disease.

[When the stomach will bear it, sweet oil, given in doses sufficiently large to produce purgation, should be administered every ten or twelve hours. The abstraction of blood by means of cupping-glasses, or leeches when they can be obtained, from the pit of the stomach, will also be highly beneficial. When the pain is very great, or much inclination to vomit remains after the blister is drawn, a small portion of the cuticle should be removed, and a grain of morphine sprinkled over the abraded surface.]

The feet and legs ought likewise to be frequently bathed in lukewarm water, and warm bricks or poultices may be applied to the soles of the feet. The warm bath, if it can be conveniently used, will be of great service.

In this, and all other inflammations of the bowels, a large blister, applied over the part affected, is one of our best remedies.

The only internal medicines which we shall venture to recommend in this disease, are mild clysters. These may be made of warm water, or thin water-gruel; and if the patient be costive, a little sweet oil, honey, or manna may be added. Clysters answer the purpose of an internal fomentation, while they keep the body open, and at the same time nourish the patient, who is often in this disease unable to retain any food upon his stomach. For these reasons they must not be neglected, as the patient's life may depend on them.

INFLAMMATION OF THE INTESTINES.—ENTERITIS.

THIS, like inflammation of the stomach, is of two species, viz. the phlegmonous and erysipelatous; the first only is here noticed, as the latter is invariably symptomatic of some other disease, and is one of the most painful and dangerous diseases to which mankind are liable. It generally proceeds from the same causes as the inflammation of the stomach; to which may be added, costiveness, worms, eating unripe fruits or great quantities of nuts, drinking hard windy malt liquors, as stale bottled beer or ale, sour wine, or cider. It may likewise be occasioned by a rupture, by scirrhus tumors of the intestines, or by their opposite sides growing together.

The inflammation of the intestines is denominated *Iliac passion*, *Enteritis*, &c. according to the names of the parts affected. The treatment, however, is nearly the same, whatever part of the intestinal canal be the seat of the disease; we shall therefore omit these distinctions, lest they should perplex the reader.

The *symptoms* here are nearly the same as in the foregoing disease, only the pain, if possible, is more acute, and is situated lower in the abdomen. The vomiting is likewise more violent, and sometimes even the excrements, together with the clysters, are discharged by the mouth. The patient is continually belching up wind, and has often an obstruction of his urine.

While the pain shifts, and the vomiting only returns at certain intervals, and while the clysters pass downwards, there is ground for hope; but when the clysters and *fæces* are vomited, and the patient is exceedingly weak, with a low fluttering pulse, a pale countenance, and a disagreeable breath, there is great reason to fear the consequences will prove fatal. Clammy sweats, with a small intermitting pulse, and a total cessation of pain, are the signs of a mortification already begun, and of approaching death.

Regimen.—The regimen in this disease is in general the same as in inflammation of the stomach. The patient must be kept quiet, avoiding cold, and all violent passions of the mind. His food ought to be very light, and given in small quantities; his drink weak and diluting; as clear whey, barley-water, and mucilage of gum Arabic.

Treatment.—Bleeding in this, as well as in the inflammation of the stomach, is of the greatest importance. It should be per-

formed as soon as the symptoms appear, and must be repeated according to the violence of the disease.

Fomentations, laxative clysters, and leeches, are by no means to be omitted. The patient's feet and legs should frequently be bathed in warm water; and cloths dipped in it applied to his belly. Bladders filled with warm water may likewise be applied to the region of the navel, and warm bricks, or bottles filled with warm water, to the soles of the feet. The clysters may be made of barley-water, or thin gruel with salt, and softened with sweet oil or fresh butter. These may be administered every two or three hours, or oftener, if the patient continues costive.

A blistering plaster is here likewise to be applied immediately over the part where the most violent pain is. This not only relieves the pain of the bowels, but even clysters and purgative medicines, which before had no effect, will operate when the blister begins to rise.

If the disease does not yield to clysters and fomentations, recourse must be had to purgatives; but as these, by irritating the bowels, often increase their contraction, and by that means frustrate their own intention, it will be necessary sometimes to join them with opiates, which, by allaying the pain, and relaxing the spasmodic contractions of the bowels, greatly assist the operation of purgatives.

Acids have often a very happy effect in staying the vomiting, and appeasing the other violent symptoms of this disease; it will therefore be of use to sharpen the patient's drink with cream of tartar, juice of lemon, or, when these cannot be obtained, with vinegar.

But it often happens that no liquid whatever will stay on the stomach. In this case the patient must take purging pills. I have generally found the following answer very well:—Take jalap in powder, and vitriolated tartar, of each half a drachm, calomel twenty grains, opium one grain, Castile soap as much as will make the mass fit for pills. Half of these must be taken at one dose, and if they do not operate in a few hours, the dose may be repeated.

[Ipecacuanha, given in small doses, so as to purge without vomiting, is decidedly the best cathartic that can be exhibited in this disease. It should be given in as large doses and as frequently repeated as the stomach will bear. When the liver is torpid, it may be united with calomel. If the irritability of the stomach be so great as to forbid the employment of ipecac., calomel alone

should be administered, and followed in six or eight hours by olive or castor oil, or magnesia, or senna tea.]

If a stool cannot be procured by any of the above means, it will be necessary to immerse the patient in warm water up to the breast. I have often seen this succeed when other means had been tried in vain. The patient must continue in the water as long as he can easily bear it without fainting, and if one immersion has not the desired effect, it may be repeated as soon as the patient's strength and spirits are recruited. It is more safe for him to go frequently into the bath than to continue too long at a time; and it is often necessary to repeat it several times before it has the desired effect.

It has sometimes happened, after all other means of procuring a stool had been tried to no purpose, that this was brought about by immersing the patient's lower extremities in cold water, or making him walk upon a wet pavement, and dashing his legs and thighs with the cold water. This method, when others fail, at least merits a trial. It is, indeed, attended with some danger; but a doubtful remedy is better than none.

If the disease proceeds from a rupture, the patient must be laid with his head very low, and the intestines returned by gentle pressure with the hand. If this, with fomentations and clysters, should not succeed, recourse must be had to a surgical operation, which may give the patient relief.

Such as would avoid this excruciating and dangerous disease, must take care never to be too long without a stool. Some who have died of it, have had several pounds of hard dry *feces* taken out of their intestines. They should likewise beware of eating too freely of sour or unripe fruits, or drinking stale windy liquors. I have known it brought on by living too much on baked fruits, which are seldom good. It likewise proceeds frequently from cold caught by wet clothes, but especially from wet feet.

COLIC.—COLICA.

THE colic has a great resemblance to the two preceding diseases, both in its symptoms and method of cure. It is generally attended with costiveness, and acute pain of the bowels; and requires diluting diet, evacuations, and fomentations.

[Colic may be distinguished from inflammation of the bowels,

by pressing on the abdomen. In almost all cases of colic, pressure rather relieves the pain than adds to its violence; but in every description of intestinal inflammation, even the slightest pressure will aggravate the painful symptoms.]

Colics are variously denominated according to their causes, as the *flatulent*, the *bilious*, the *hysterical*, and the *nervous*. And as each of these requires a particular method of treatment, we shall point out their most general symptoms, with the means to be used for their relief.

The *flatulent*, or wind colic, is generally occasioned by an indiscreet use of unripe fruits, meats of hard digestion, windy vegetables, fermenting liquors, and such like. It may likewise proceed from obstructed perspiration, or catching cold. Delicate people, whose digestive powers are weak, are most liable to this kind of colic.

The flatulent colic may either affect the stomach or intestines. It is attended with a painful stretching of the affected part. The patient feels a rumbling in his bowels, and is generally relieved by a discharge of wind, either upwards or downwards. The pain is seldom confined to any particular part, as the vapor wanders from one division of the bowels to another, till it finds a vent.

When the disease proceeds from windy liquor, green fruits, sour herbs, or the like, the best medicine on the first appearance of the symptoms is a glass of brandy, gin, or any good spirits, or aromatic cordials combined with opiates. The patient should likewise sit with his feet upon a warm hearth-stone, or apply warm bricks to them; and warm clothes may be applied to his stomach and bowels. If costiveness prevail, some general laxative may be given.

This is the only colic in which ardent spirits, spiceries, or any thing of a hot nature may be ventured upon. Nor indeed are they to be used here, unless at the very beginning, before any symptoms of inflammation appear. We have reason to believe that the colic occasioned by wind or flatulent food might always be cured by spirits or warm liquors, if they were taken immediately upon perceiving the first uneasiness; but when the pain has continued for a considerable time, and there is reason to fear that inflammation of the bowels is already begun, all hot things are to be avoided as poison, and the patient is to be treated in the same manner as for inflammation of the intestines.

[“Dry frictions with flannels or a flesh-brush, is an excellent means for removing flatulent pains of the stomach. By rapid frictions on the pit of the stomach, the wind is generally discharged

in copious torrents, and where there is no fixed irritating cause in the stomach that requires removal, we may often, in this way, put a termination to the gastric pains. From five to ten grains of camphor, with about thirty drops of vitriolic ether, and the same quantity of laudanum, has frequently afforded prompt relief in my hands. The oil of juniper or the spirits of turpentine will also generally allay the pain in slight cases.”]

Several kinds of food, occasion colics in some particular constitutions. I have generally found the best method of cure for these was to drink plentifully of small diluting liquors, as water-gruel, small posset, toast and water, &c.

Colics which proceed from excess and indigestion, generally cure themselves by occasioning vomiting or purging. These discharges are by no means to be stopped, but promoted by drinking plentifully of warm water. When their violence is over, the patient may take a dose of rhubarb, or any other gentle purge, to carry off the dregs of his debauch.

[A combination of castor oil with spirits of turpentine, is one of the most prompt and efficacious remedies that can be employed in cases arising from the presence of acrid or irritating substances in the bowels. It frequently happens, however, that the sufferings of the patient are so great, that relief must be obtained, if possible, before a cathartic could have time to operate. In such cases, opium is the only sure dependence. It should be given in doses of one or two grains, and repeated until the object is effected.]

Colics which are occasioned by wet feet, or catching cold, may generally be removed at the beginning by bathing the feet and legs in warm water, and drinking such warm diluting liquors as will promote perspiration, as weak wine-whey, or water-gruel with a small quantity of spirits in it.

Those flatulent colics, which prevail so much among country-people, might generally be prevented, were they careful to change their clothes when they get wet. We do not mean to recommend the practice of dram-drinking, but in this case ardent spirits prove a real medicine, and indeed the best that can be administered. A glass of good peppermint-water will have nearly the same effect as a glass of brandy, and in some cases is rather to be preferred.

The *bilious* colic is attended with very acute pains about the region of the navel. The patient complains of great thirst, and is generally costive. He vomits a hot, bitter, and yellow-colored bile, which, being discharged, seems to afford some relief, but is quickly followed by the same violent pain as before. As the dis-

temper advances, the propensity to vomit sometimes increases so as to become almost continual, and the proper motion of the intestines is so far perverted, that there are all the symptoms of an impending iliac passion.

If the patient be young and strong, and the pulse full and frequent, it will be proper to bleed, after which purgatives may be administered. Clear whey or gruel, sharpened with the juice of lemon or cream of tartar, must be drunk freely. Small chicken-broth, with a little manna dissolved in it, or a slight decoction of tamarinds, is likewise very proper, or any other thin, acid, opening liquor.

[When spontaneous vomiting does not occur to any great extent, the exhibition of an emetic should be among the first remedies resorted to in bilious colic. After the operation of the emetic is over, calomel should be exhibited in repeated doses until the irritability of the stomach is allayed. It will be retained when every other cathartic will be rejected; especially if assisted by the application of mustard draughts to the pit of the stomach. As soon as there is a probability of their being retained, some one of the purgatives mentioned in the treatment of bilious fever may be administered; and the action of the bowels kept up by the regular use of them until the patient is entirely relieved.]

Besides bleeding and plentiful dilution, it will be necessary to foment the belly with cloths dipped in warm water, and if this should not succeed, the patient must be immersed up to the breast in warm water.

In the bilious colic, the vomiting is often very difficult to restrain. When this happens, the patient may drink a decoction of toasted bread, or an infusion of garden-mint in boiling water. Should these not have the desired effect, the saline draught, with a few drops of laudanum in it, may be given, and repeated according to the urgency of the symptoms. A small quantity of Venice treacle may be spread in form of a cataplasm, and applied to the pit of the stomach. Clysters, with a proper quantity of Venice treacle or liquid laudanum in them, may likewise be frequently administered.

The *hysterical* colic bears great resemblance to the bilious. It is attended with acute pains about the region of the stomach, vomiting, &c. What the patient vomits in this case is commonly of a greenish color. There is a great sinking of the spirits, with dejection of mind and difficulty of breathing, which are the characteristic symptoms of this disorder. Sometimes it is accompanied

with the jaundice, but this generally goes off of its own accord in a few days.

In this colic all evacuations, as bleeding, purging, vomiting, &c. do hurt. Every thing that weakens the patient, or sinks the spirits, is to be avoided. If, however, the vomiting should prove violent, lukewarm water may be drank to cleanse the stomach. Afterwards the patient may take fifteen, twenty, or twenty-five drops of liquid laudanum in a glass of cinnamon-water. This may be repeated every ten or twelve hours, till the symptoms abate.

The patient may likewise take four or five of the fœtid pills every six hours, and drink a cup of penny-royal tea after them. If *asafoetida* should prove disagreeable, which is sometimes the case, a teaspoonful of the tincture of castor in a cup of penny-royal tea, or thirty or forty drops of the balsam of Peru dropped upon a bit of loaf-sugar, may be taken in its stead.

The *nervous* colic prevails among miners, smelters of lead, painters, the manufacturers of white lead, &c. It is very common in the cider counties of England, and is supposed to be occasioned by the leaden vessels used in preparing that liquor. It is likewise a frequent disease in the West Indies, where it is termed the dry belly-ache.

No disease of the bowels is attended with more excruciating pain than this; nor is it soon at an end. I have known it continue eight or ten days with very little intermission, the body all the while continuing bound in spite of medicine, yet at length yield, and the patient recover. It generally, however, leaves the patient weak, and often ends in a palsy.

The general treatment of this disease is nearly the same with that of the iliac passion, or inflammation of the bowels. The body is to be opened by mild purgatives given in small doses, and frequently repeated, and their operation must be assisted by soft oily clysters, fomentations, &c. The castor oil is reckoned peculiarly proper in this disease. It may both be mixed with the clysters, and given by the mouth, in dose of one, two, or three table-spoonfuls.

[The most certain remedy in this disease, and the one relied on by almost every physician who has had much experience in it, is calomel, carried to the extent of producing slight salivation. For this purpose, from five to ten grains of calomel with half a grain of opium should be given every four hours, until the gums begin to redden or swell. As soon as these effects are produced, castor oil and turpentine, or senna tea with epsom salts in solution, should be exhibited, and repeated if necessary until the bowels are freely

evacuated. This treatment may be continued for a week or two with advantage in the generality of cases; taking care to repeat the calomel whenever the gums lose their tenderness. "*Alum* is much praised by the German physicians in the treatment of this disease. Richter declares that it will sometimes procure relief where opium and all other remedies fail." In violent cases, twenty grains of alum with one grain of opium may be given every three hours until the pain is allayed; to be followed by the treatment recommended above. The diet should consist, throughout the whole course of the disease, of fat animal broths, or chicken-water; and the patient should carefully avoid drinking cold water or stimulating fluids.

The use of sulphuric acid has recently been recommended to persons exposed to the causes of painters' colic. Eight or ten drops of elixir vitriol may be taken in half a glass of cold water, twice a-day. The acid by uniting with the lead forms an inert compound, and this destroys its poisonous properties.]

If the patient remain weak and languid after this disease, he must take exercise on horseback.

To avoid this kind of colic, people must shun all sour fruits, acid and austere liquors. Those who work in lead ought never to go to their business fasting, and their food should be oily or fat. They may take a glass of salad oil every morning, but should never take spirits. Liquid aliment is best for them; but low living is bad. They should frequently go a little out of the tainted air; and should never suffer themselves to be costive. In the West Indies, and on the coast of Guinea, it has been found of great use, for preventing this colic, to wear a piece of flannel round the waist, and to drink an infusion of ginger.

Sundry other kinds of this disease might be mentioned, but too many distinctions would tend only to perplex the reader. Those already mentioned are the most material, and should, indeed, be attended to, as their treatment is very different. But even persons who are not in a condition to distinguish very accurately in these matters, may nevertheless be of great service to patients in colics of every kind, by only observing the following general rules, viz. To bathe the feet and legs in warm water; to apply bladders filled with warm water, or cloths wrung out of it, to the stomach and bowels; to make the patient drink freely of diluting mucilaginous liquors; and to give him an emollient clyster every two or three hours. Should these not succeed, the patient ought to be immersed in warm water.

INFLAMMATION OF THE KIDNEYS.—NEPHRITIS.

PROPERLY considered, inflammation of the kidneys appears to be of two kinds; one arising from the general causes of inflammation, and seated principally in the external membrane of the kidneys, the other occasioned by the stimulus of the gravel or stone in the pelvis or cavity of it, and the inflammation occupying the interior parts. It is the first that is here noticed; the other will be referred to under the head of Stone and Gravel.

Causes.—This disease may proceed from any of those causes which produce an inflammatory fever. It may likewise be occasioned by wounds or bruises of the kidneys; small stones or gravel lodging within them; by strong diuretic medicines, as spirits of turpentine, tincture of cantharides, &c. Violent motion, as hard riding or walking, especially in hot weather, or whatever drives the blood too forcibly into the kidneys, may occasion this malady. It may likewise proceed from lying too soft, too much on the back, and involuntary contractions or spasms in the urinary vessels.

Symptoms.—There is a sharp pain about the region of the kidneys, with some degree of fever, and a stupor or dull pain in the thigh of the affected side. The urine is at first clear, and afterwards of a reddish color; but in the worst kind of the disease it generally continues pale, is passed with difficulty, and commonly in small quantities at a time. The patient feels great uneasiness when he endeavors to walk or sit upright. He lies with most ease on the affected side, and has generally a nausea or vomiting, resembling that which happens in the colic. [There is frequently a retraction of the testicle of the affected side. The pulse is full, hard, and frequent in the beginning of the disease, but after a day or two it generally becomes small and frequent, particularly in cases attended with much nausea and vomiting. The skin is warmer than natural, and presents a dry, parched appearance.]

This disease may be distinguished from the colic by the pain being seated farther back, and by the difficulty of passing urine, with which it is constantly attended.

Regimen.—Every thing of a heating or stimulating nature is to be avoided. The food must be thin and light; as panado, small broths, with mild vegetables, and the like. Emollient and thin liquors must be plentifully drank; as clear whey, or balm-tea sweetened with honey, decoctions of marshmallow roots, with

barley and liquorice. The patient, notwithstanding the vomiting, must constantly keep sipping small quantities of these or other diluting liquors. Nothing so safely and certainly abates the inflammation and expels the obstructing cause, as copious dilution. The patient must be kept easy, quiet, and free from cold, as long as any symptoms of inflammation remain.

Treatment.—Bleeding is generally necessary, especially at the beginning. Ten or twelve ounces may be let from the arm or foot with a lancet; and if the pain and inflammation continue, the operation may be repeated in twenty-four hours, especially if the patient be of a full habit. Leeches may likewise be applied to the seat of pain, and to the hæmorrhoidal veins, as a discharge from these will greatly relieve the patient.

Cloths dipped in warm water, or bladders filled with it, must be applied as near as possible to the part affected, and renewed as they grow cool.

[As soon after bloodletting as possible, from ten to twenty grains of calomel with an equal quantity of jalap, should be exhibited, and if they do not act in four or five hours, follow them by a full dose of castor oil. The bowels must be kept in a soluble condition throughout the disease, by the daily administration of cathartics, as nothing will contribute more towards reducing the local inflammation than active purgation. Equal portions of calomel, aloes and jalap, made into pills, will generally fulfil this indication. Give enough to effect the object. At night, after the operation of the purgative, injections of flaxseed-tea, or warm milk and water, with a tea-spoonful of laudanum, will afford great relief.]

The same course is to be followed where gravel or stone is lodged in the kidney; but when the gravel or stone is separated from the kidney, and lodges in the ureter,* it will be proper, besides the fomentations, to rub the small of the back with sweet oil, and to give gentle diuretics, as juniper-water sweetened with the syrup of marsh-mallows: a tea-spoonful of the sweet spirits of nitre with a few drops of laudanum, may now and then be put in a cup of the patient's drink; or a decoction of the dried leaves of the peach tree. He ought likewise to take exercise on horseback, or in a carriage, if he be able to bear it.

When the disease is protracted beyond the seventh or eighth day, and the patient complains of a stupor and heaviness of the

* The ureters are two long and slender canals, one on each side, which carry the urine from the basin of the kidneys to the bladder. They are sometimes obstructed by small pieces of gravel falling down from the kidneys, and lodging in them.

part, and has frequent returns of chilliness, or shivering, there is reason to suspect that matter is forming in the kidney, and that an abscess will ensue.

When matter in the urine shows that an ulcer is already formed in the kidney, the patient must be careful to abstain from all acrid, sour, and salted provisions; and to live chiefly upon mild mucilaginous herbs and fruits, together with the broth of young animals, made with barley and common pot-herbs. His drink may be whey, and buttermilk that is not sour. The latter is by some reckoned a specific remedy in ulcers of the kidneys. To answer this character, however, it must be drank for a considerable time. Chalybeate waters have likewise been found beneficial in this disease. It must likewise be used for a considerable time, in order to produce any salutary effect.

[*Urva Ursi* (bearberry leaves) may be employed with great advantage in cases where slight pain and soreness in the region of the kidney remain after the inflammatory symptoms have been subdued. It may be given alone or in combination with opium. Twenty or thirty grains of the powdered leaf with three grains of Dover's powder, may be taken every six hours. When the powder is objected to, an infusion may be made by pouring a pint of boiling water on one ounce of the leaves in powder; of which a wine-glassful is a dose. This remedy is also eminently successful in cases where the inflammation has terminated in suppuration. Its use should be faithfully persevered in for some length of time. I have seen cases, which had resisted every other plan of treatment for months, yield to the *uva ursi*, when taken as directed for a few weeks.]

Those who are liable to frequent returns of inflammation, or obstructions of the kidneys, must abstain from wines, especially such as abound with tartar; and their food ought to be light and easy of digestion. They should use moderate exercise, not lie too hot, nor too much on their back, and avoid costiveness.

INFLAMMATION OF THE BLADDER.—CYSTITIS.

Inflammation of the bladder proceeds, in a great measure, from the same causes as that of the kidneys. It is known by an acute pain and tension towards the bottom of the belly, and difficulty of passing urine, with some degree of fever, a constant inclination to go to stool, and a perpetual desire to make water.

This disease must be treated on the same principles, as the one immediately preceding. The diet must be light and thin, and the drink of a cooling nature. Bleeding is very proper at the beginning, and in robust constitutions it will often be necessary to repeat it. The lower part of the belly should be fomented with warm water, or a decoction of mild vegetables; and purgatives and emollient clysters ought frequently to be administered.

The patient should abstain from every thing that is of a hot, acrid, and stimulating quality; and should live entirely upon broths, gruels, or mild vegetables.

A stoppage of urine may proceed from other causes besides an inflammation of the bladder; as a swelling of the hæmorrhoidal veins; hardened *fæces* lodged in the *rectum*; a stone in the bladder; excrescences in the urinary passages, palsy of the bladder, hysteric affections, &c. Each of these requires a particular treatment which does not fall under our present consideration. We shall only observe, that in all of them mild and gentle applications are the safest, as strong diuretic medicines, or things of an irritating nature, generally increase the danger. I have known some persons kill themselves by introducing probes into the urinary passages, to remove, as they thought, something that obstructed the discharge of urine, and others bring on a violent inflammation of the bladder, by using strong diuretics for that purpose.

INFLAMMATION OF THE LIVER.—HEPATITIS

THE liver is less subject to inflammation than most of the other viscera; but when inflammation does happen, it is with difficulty removed, and often ends in suppuration or scirrhus.

Causes.—Besides the common causes of inflammation, we may reckon the following, viz. excessive fatness, scirrhus of the liver itself; violent shocks; from strong vomits when the liver was before unsound; any thing that suddenly cools the liver after it has been greatly heated; stones obstructing the course of the bile; drinking strong wines and spirituous liquors; using hot spicy aliment; obstinate hypochondriacal affections; long-continued intermittent and remittent fevers; contusions; blows; and in five cases out of six the partial application of cold or wet when the body is heated or over fatigued with exercise.

Symptoms.—This disease is known by a painful tension of the right side under the false ribs, attended with some degree of fever,

a sense of weight, or fulness of the part, difficulty of breathing, loathing of food, great thirst, with a pale or yellowish color of the skin and eyes.

The *symptoms* here are various, according to the degree of inflammation, and likewise according to the particular part of the liver where the inflammation happens. Sometimes the pain is so inconsiderable, that inflammation is not so much as suspected; but when it happens in the upper or convex part of the liver, the pain is more acute, the pulse quicker, and the patient is often troubled with a dry cough, hiccough, and a pain extending to the shoulder, with difficulty of lying on the left side.

This disease may be distinguished from pleurisy, by the pain being less violent, and seated under the false ribs, the pulse not so hard, and by the difficulty of lying on the left side. It may be distinguished from hysteric and hypochondriac disorders by the degree of fever with which it is always attended.

In warm climates, this viscus is more apt to be affected with inflammation than any other part of the body, from, in all probability, the increased secretion of bile which takes place when the blood is thrown on the internal parts by exposure to cold; or from the bile becoming acrid, and thereby exciting irritation of the part.

This disease, if properly treated, is seldom mortal. A constant hiccoughing, violent fever, and excessive thirst, are bad symptoms. If it ends in a suppuration, and the matter cannot be discharged outwardly, the danger is great. When scirrhus of the liver ensues, the patient, if he observes a proper regimen, may nevertheless live a number of years tolerably easy; but if he indulge in animal food and strong liquors, or take medicines of an acrid and irritating nature, the scirrhus will be converted into cancer, which must infallibly prove fatal.

Regimen.—The same regimen is to be observed in this as in other inflammatory disorders. All hot things are to be carefully avoided, and cool diluting liquors, as whey, barley-water, &c. drank freely. The food must be light and thin, and the body, as well as the mind, kept easy and quiet.

Treatment.—Bleeding from a large orifice is proper at the beginning of this disease, and it will often be necessary, even though the pulse should not feel hard, to repeat it. All violent purgatives are to be avoided; the body, however, must be kept gently open, and immediately after venesection, a large dose of the submuriate of mercury and colocynth may be directed; or the bowels may be

kept open with the neutral salts or jalap, giving the subnuriate of mercury from time to time. The side affected must be fomented in the manner directed in the foregoing diseases. Mild laxative clysters should be frequently administered; and, if the pain should notwithstanding continue violent, a blistering plaster may be applied over the part affected.

Medicines which promote the secretion of urine have a very good effect here. For this purpose half a drachm of purified nitre, or a teaspoonful of the sweet spirits of nitre, may be taken in a cup of the patient's drink three or four times a-day.

When there is an inclination to sweat, it ought to be promoted, but not by warm sudorifics. The only thing to be used for that purpose is plenty of diluting liquor drank about blood-warm. Indeed the patient in this case, as well as in all other topical inflammations, ought to drink nothing that is colder than this medium.

If the stools should be loose, and even streaked with blood, no means must be used to stop them, unless they be so frequent as to weaken the patient. Loose stools often prove critical, and carry off the disease.

Mercurial friction, should the disease resist the ordinary means, may be employed, in the proportion of a drachm of the blue ointment rubbed over and about the affected part every night until a slight degree of salivation is excited, or rather until some obvious effect in the constitution is produced; and this may be commenced at the end of the fourth or fifth day of the disease. Should the friction in this part be attended with any inconvenience, it may be applied to the groins, taking care, however, not to carry it beyond the point bordering on salivation. If the disease yields readily, a short course of medicine will be sufficient; but otherwise its use must be continued for, perhaps, five or six weeks. This remedy has latterly been very extensively and beneficially employed.

If an abscess or imposthume is formed in the liver, methods should be tried to make it break and discharge itself outwardly, as fomentations, the application of poultices, or ripening cataplasms. Sometimes, indeed, the matter of an abscess comes away in the urine, and sometimes it is discharged by stool; but these are efforts of nature which no means can promote. When the abscess bursts into the cavity of the *abdomen*, death must ensue; nor will the event be more favorable when the abscess is opened by an incision, unless in cases where the liver adheres to the *peritonæum*, so as to form a bag for the matter, and prevent it from falling into

the cavity of the *abdomen*; in which case opening the abscess by a sufficiently large incision will probably save the patient's life.*

If the disorder, in spite of all endeavors to the contrary, should end in scirrhus, the patient must be careful to regulate his diet in such a manner as not to aggravate the disease. He must not indulge in flesh, fish, strong liquors, or any highly seasoned or salted provisions; but should, for the most part, live on mild vegetables, as fruits and roots, taking gentle exercise, and drinking whey, barley-water, or butter-milk.

If the fomentations do not remove or abate the pain, recourse must be had to blisters, and the warm bath, in which the patient is to continue as long as his strength will permit. The want of a proper warm bath may be supplied by some of the portable baths, filled with warm water. The most convenient of these contrivances, which are to be had at the tin-shops, is commonly called the *slipper-bath*, from its resembling a slipper in form. A cask, or a common tub, may be used for the purpose upon an emergency, though not so commodious.

When hepatitis degenerates into a chronic state, the common mode of cure is by mercury, which is the most effectual practice. It should be given in small doses and slowly, as it promotes the secretion of bile, and excites the extreme vessels on the surface; and to increase the latter effect, it has been found useful to combine it with small proportions of antimonial powder.

[The nitro-muriatic acid bath has been used with great success in chronic liver complaints. The following directions for its preparation and use are given by Dr. Johnson, who speaks of it in high terms of praise. Into a glass vessel capable of holding a pint or more of fluid, put eight ounces of water; and then pour in four ounces of nitric, and the same quantity of muriatic acid. One ounce of this mixture to a gallon of water will form a bath of medium strength. The feet and legs of the patient are to be immersed in this bath at the temperature of about 96°, and kept there twenty minutes, or half an hour, just before going to bed. This should be done every night, and the same bath will remain good for five or six nights." If the bath at this strength produces no irritation of the skin, more acid must be added. Much benefit will often result from bathing the affected side with the same solution. "The internal use of the nitrous acid, also, has been found very beneficial

* I know a gentleman who had several abscesses of the liver opened, and is now a strong and healthy man, though above eighty years of age.

in this affection. From two to four drachms, diluted in a large portion of some mucilaginous fluid, may be taken in the course of twenty-four hours." Considerable advantage will generally arise from pustulation of the right side with strong tartar-ointment. After the pustules are formed, they should be kept open by the occasional use of the same ointment.]

General bleeding is never necessary in chronic inflammation of the liver; but in a few instances topical bleeding by means of leeches or scarifications (cupping) may be serviceable. When there is much local uneasiness, blisters may be advantageously applied. Inflammation of the stomach and bowels are usually attended with obstinate costiveness, for the removal of which no small skill and perseverance are often necessary. Sometimes a very mild medicine will operate, where a powerful one has had no effect. I have known a few spoonfuls of castor oil procure a stool, after the failure of strong gastric purges. The means, therefore, should be varied, not hastily discontinued. Where one thing does not succeed, another may be happily employed; and instances are not wanting of the efficacy even of external applications, when the best internal remedies have proved unsuccessful.

CHOLERA MORBUS.

THE *cholera morbus* is a violent purging and vomiting of bilious matter, attended with gripes, sickness, and a constant desire to go to stool. It comes on suddenly, and is most common in autumn. There is hardly any disease that kills more quickly than this, when proper means are not used in due time for removing it.

In warm climates it is met with at all seasons of the year, and its occurrences are very frequent; but in cold climates it is apt to prevail most during the autumnal months, when there is excessive heat, or sudden transitions from heat to cold; and the violence of the disease has usually been observed to be greater in proportion to the intenseness of the heat,—circumstances which induce the belief that cholera morbus is the effect of a warm atmosphere, producing some change in the state of the bile, which may consist either in the matter of the bile being rendered more acrid, or its secretion being preternaturally increased. In some instances, the disease has been observed to proceed from obstructed perspiration, and food that passes readily into the acetous fermentation, though

these causes might not give rise to it without the predisposition acquired by preceding great heat, succeeded by sudden transitions of cold, particularly in the evenings.

Causes.—It is occasioned by a redundancy of bile; food that easily turns rancid or sour on the stomach; as butter, bacon, sweetmeats, cucumbers, melons, cherries, and other cold unripe fruits. It is sometimes the effect of strong acrid purges or vomits, or of poisonous substances taken into the stomach. It may likewise proceed from violent passions or affections of the mind.

Symptoms.—It is generally preceded by *cardialgia*, or heart-burn, sour belchings, and flatulencies, with pain of the stomach and intestines. To these succeed nausea, excessive vomiting, and purging of green, yellow, or blackish-colored bile, with distension of the stomach, and violent griping pains. There is likewise great thirst, with a very quick and unequal pulse, and often a fixed acute pain about the region of the navel. As the disease advances, the pulse often sinks so low as to become quite imperceptible, the extremities grow cold or cramped, and are often covered with a clammy sweat, the urine is obstructed, and there is a palpitation of the heart. Violent hiccoughing, fainting, and convulsions, are the signs of approaching death.

Treatment.—At the beginning of this disease, the efforts of Nature to expel the offending cause should be assisted, by promoting the purging and vomiting. For this purpose the patient must drink freely of diluting liquors; as whey, butter-milk, warm water, thin water-gruel, barley-water, linseed tea, or, what is perhaps preferable to any of them, very weak chicken broth. This should not only be drank plentifully to promote the vomiting, but a clyster of it given every hour in order to promote the purging. In addition to these means, flannel cloths wrung out in a warm decoction of poppy-heads slightly bruised, with the addition of about one-fourth of the spirit of camphor, may be applied to the region of the stomach, renewing them as often as they become cold; or opium in the form of an external embrocation.

After these evacuations have been continued for some time, a decoction of toasted oat-bread may be drank to stop the vomiting. The bread should be toasted till it is of a brown color, and afterwards boiled in spring water. If oat-bread cannot be had, wheat-bread, or oat-meal well toasted may be used in its stead. If this does not put a stop to the vomiting, two table-spoonfuls of the saline julep, with ten drops of laudanum, may be taken every hour till it ceases.

The vomiting and purging, however, ought never to be stopped too soon. As long as these discharges do not weaken the patient, they are salutary, and may be allowed to go on, or rather ought to be promoted. But when the patient is weakened by the evacuations, which may be known from the sinking of his pulse, &c. recourse must immediately be had to opiates, as recommended above; to which may be added strong wines, with spirituous cinnamon-waters, and other generous cordials; or large doses of diluted sulphuric acid, which is said to abate the irritation of the stomach more readily than even opium. His legs should be bathed in warm water, and afterwards rubbed with flannel cloths, or wrapped in warm blankets, and warm bricks applied to the soles of his feet.

The application of a blister to the stomach will sometimes put a stop to the vomiting. In very severe cases, the external application of nitric acid has been suggested, as a counter-irritant, as a considerable time may elapse before the blister begins to irritate.

Though physicians are seldom called in due time in this disease, they ought not to despair of relieving the patient even in the most desperate circumstances. Of this I lately saw a very striking proof in an old man and his son, who had been both seized with it about the middle of the night. I did not see them till next morning, when they had much more the appearance of dead than of living men. No pulse could be felt: the extremities were cold and rigid, the countenance was ghastly, and the strength almost quite exhausted. Yet from this deplorable condition they were both recovered by the use of opiates and cordial medicines.

I have frequently had occasion to see this disease, and have sometimes felt it. Yet I never met with an instance, in my own practice, where it proved fatal, though we are told this often happens. Whether so lamentable an issue be owing to improper treatment, or to the extreme weakness of the patient's bowels, I cannot pretend to say, without an exact knowledge of each particular case; but I am inclined to think, that when death is the consequence, the antidote, which is opium, has been too long delayed. No time should be lost in administering it, upon the first serious alarm, and before the powers of Nature are exhausted. What I generally prescribe is laudanum, to be taken in cinnamon or some other cordial water. Ten drops of laudanum may be added to two ounces of simple cinnamon water, and the draught repeated every two hours, or oftener if necessary.

MALIGNANT CHOLERA.—CHOLERA MORBUS.

[THIS disease is also termed *Asiatic Cholera*, *Spasmodic Cholera*, *Mort de Chien*, and *Cholera Asphyxia*, by different writers; its fearful ravages in Europe and America, however, during the last seven years, have made it too well known to be mistaken for any other disease, by whatever name it may be called. It is generally spoken of as a malady which was unknown until about twenty years ago; but it is evident from the older writers, both of India and of Europe, that the disease had frequently been seen before. Its appearance is shown to have generally been as sudden, and its attacks to have been as violent as in later times. But it was not until the year 1817, that it began to excite general attention, caused great alarm, and became the subject of careful observation. In that year it prevailed in India most extensively, beginning without any known cause, and continuing to spread in every variety of season and weather, in every variety of heat and cold, and rain and drought, attacking Indians and Europeans, and people of all constitutions.

It commenced in Bengal, from which part of India it has hardly ever since been absent; in the next year, 1818, it passed on to the Coromandel Coast, or Presidency of Madras, where, with the exception of two or three years, it has, more or less, ever since prevailed. In the same year it visited the coast of Malabar, and spread to the Burmese empire: and it is traced in 1819, to the islands of Penang and Sumatra, to Ceylon and Malacca, and to the Mauritius; and in 1820, to China, and successively throughout large portions of Eastern Asia; to islands in the African Ocean; to Arabia, Mesopotamia, Syria and Judea, in 1821; and to Persia in 1822. At length it appeared in Russia. It extended to Poland in March, 1831; it appeared in Prussia in May, and also in Austria. In June it reached St. Petersburg; in October it appeared at Hamburgh; and in the same month spread to Great Britain.

Its first appearance, as an epidemic, on the American continent, was at Quebec, on the 8th of June, 1832, and in a short time it passed to Montreal and other towns on the waters of the St. Lawrence. It appeared in New-York on the 24th of June; Albany on the 3d of July; and in Philadelphia two days afterwards. The first point visited by cholera in the valley of the Mississippi, was Cincinnati, where it commenced on the 30th of September, 1832; and in a short time spread to Madison, Louisville, and St. Louis;

and within another fortnight, appeared at Maysville, Wheeling, and other towns on the Ohio river. It reached Frankfort and Lexington, Kentucky, about the latter end of October or beginning of November; at which period it also began to prevail in New-Orleans—having traversed the continent, from the St. Lawrence to the Gulf of Mexico, in the space of four months. It appeared again in 1833-4-5-6, in most of the towns and districts visited by it in 1832, and indeed, in almost every part of the United States during some one of those years; since which time it has ceased to prevail as an epidemic, except, perhaps, in New-Orleans on one occasion; although sporadic cases have been occasionally met with up to the present time.

Symptoms.—Malignant cholera presents as much uniformity in its mode of attack as any other epidemic disease, yet great diversity is often observed in its symptoms. In most instances, its onset is violent and sudden, but usually preceded by certain “premonitory symptoms,” as furred tongue, diarrhœa, and general failure of the digestive powers, with a sensation of weight at the pit of the stomach, or some part of the abdomen, and frequently headache, ringing in the ears, &c. Sometimes there is increased vascular action, giving to the patient a feeling of unusual good health, and a greater excitement of animal spirits than is usual to him; much more frequently, the patient feels languid, weary and oppressed, with a general feeling of undefined indisposition. (Greenhow.) This state often continues for several hours or even days without being followed by the more characteristic features of the disease, or may even cease, the disorder proceeding no further. Usually after these slight symptoms, and often some hours after a meal, or more frequently still at night, the patient is attacked with a sensation of violent oppression, of cardialgia or heartburn, frequent nausea, almost constant and colliquative diarrhœa, with fluid discharges resembling rice-water; vomiting soon comes on, and after the common contents of the stomach, a clear watery fluid, interspersed with flocculi, and resembling no little that passed from the bowels, is discharged, and a feeling of exhaustion, sinking, and emptiness is experienced. The powers of locomotion are speedily arrested, spasms, affecting occasionally and by turns the whole of the muscles of voluntary motion, but particularly those of the legs, feet and hands, come on; the pulse becomes small, weak, and accelerated; respiration labored; tongue broad, pale, and moist. This condition of things soon ushers in another still worse. There is now a distressing sense of pain and burning heat in the region of the stom-

ach, with urgent thirst and desire for cold drinks; the blood forsakes the surface; the skin becomes cold, covered with a clammy sweat, and corrugated on the fingers and toes, as though they had been a long time immersed in water; the lips are livid or blue, and the limbs and parts of the body assume the same color; the pulse gradually decreases until it is no longer to be felt at the extremities, and finally even the action of the heart is scarcely perceptible on the application of the ear to the chest; the respiration is oppressed and slow; the breath cold; the voice feeble, and altered to a husky whisper; the eyes are sunken and surrounded by a livid circle, the features contracted, and the face exhibits a peculiar cadaverous aspect; the tongue becomes cold, and for the most part white, with pink at the edges; bile and urine are no longer secreted; at this period the vomiting, purging and spasms generally abate, and sometimes entirely cease. The powers of the mind do not participate in this wreck of the organic functions. The patient is often drowsy, but answers accurately and distinctly all questions put to him. In some cases his sense of feeling appears acute, causing him to complain greatly of the heat applied to restore warmth to his surface; in other instances, however, the skin is not sensible even to the action of chemical agents. It often happens that the patient dies at this stage without convulsions, or any apparent pain, and more frequently without the knowledge of those who surround him, so insensible is the transition from life to death, and so strongly does the living patient resemble the corpse.

The course of the disease, however, often differs very materially from the description given above. In the most fatal cases, there is sometimes but little apparent commotion in the system; no vomiting; hardly any purging, perhaps only one or two loose stools; no perceptible spasm; no pain of any kind; a mortal coldness, with arrest of the circulation, comes on, from the beginning, and the patient dies without a struggle. Considerable differences have also been observed in the symptoms in different persons and at different epidemic visitations. Thus at one period it has been distinguished by the absence of vomiting, and the prevalence of purging; on another, by the excess of vomiting, and, though more rarely, by the absence of purging. Spasm has been generally present in one instance of invasion, and in another hardly distinguishable. (Hays.) But, notwithstanding these and other slight variations, the general features of the disease are so marked and peculiar, that it can hardly be mistaken.

Causes.—Various theoretical views have been suggested with

regard to the origin of epidemic cholera. Among other causes, it has been ascribed to the influence of the sun and moon; to cometary influence; to mineral exhalations from the bowels of the earth; to some change in the constitution of the atmosphere; to contagion; and to animalcules, or poisonous, invisible insects in the air, taken into the lungs in breathing, or into the stomach with food and drink. Each of these theories has its advocates; but, without pretending to decide between them, we may be allowed to state, that the greatest number of facts, as well as analogy, seem to be on the side of those who contend for its malarious origin. The circumstances which especially predispose the body to the action of the cholera agent, whatever it may be, are exhaustion from age, chronic infirmities and innutritious diet; intemperance in the use of ardent spirits; long continued exertion; confined lodgings; the habitual breathing of impure air; exposure to the damp and cool atmosphere of the night, after the intense heat of the day; irregular and excessive indulgence in food; apprehension of the disease; grief from the loss of friends; and constitutional temperament or native predisposition. (Drake.) The theory of the propagation of cholera by contagion, has had more advocates, perhaps, than all the other theories combined; yet it may be confidently asserted, so far at least as its appearance and progress on this side the Atlantic may be taken into account, that it has not a single fact to sustain it, nor does it receive the slightest support from the great mass of knowledge which has been accumulating for centuries in relation to the laws which govern contagion, and the phenomena which invariably accompany the march of contagious diseases.

Treatment.—Almost every article of the materia medica, together with various means before unthought of as remedial agents, have been put in requisition for the cure of this fearful malady. Without entering into the relative merits of the different methods of treatment which have been devised and carried into operation during the last twenty years, with but little success, as has been acknowledged on all hands, the curative means which have been found pre-eminently successful in the hands of every physician who has employed them, will alone be detailed. And that the evidence of its success and its claims to the highest confidence, may not rest on the writer of this article alone, the experience of a number of prominent physicians, who tested the virtues of the plan of treatment about to be detailed, in different sections of the United States where the epidemic prevailed in its most frightful and destructive form, will be given in their own language.

As before stated, cholera appeared in Cincinnati about the last of September, 1832, and prevailed for two or three weeks with great violence. Professor Drake, who "was in the midst of those who labored under it, giving incessant advice, both as an attending and a consulting physician," comes to the following conclusion in regard to the proper treatment of the disease:—"But the chief reliance, at last, was on calomel and opium, or calomel alone. To be successful, it was necessary to administer them, especially the last, in large doses, and in powder with sugar, so as to promote their rapid diffusion over the surface of the stomach. There is not, I presume, a physician in Cincinnati, who cannot testify to the efficacy of this practice. It was worth every other therapeutic means, both external and internal. The most violent vomiting would cease, whenever the stomach could be brought under the influence of this compound, or of the calomel uncombined; and a speedy return of the suspended secretions of the liver and skin, generally, followed; after which the patient generally recovered." *

Louisville was visited by the epidemic a few days after its first appearance in Cincinnati. Dr. Bell, after detailing his views in regard to the pathology of the disease, remarks:—"We could not have desired better success in the application of curative agents, than we had with those flowing out of this view of the case. The leading remedies were calomel, the lancet, and rubefacients; sometimes we resorted to adjuvants for the calomel, but by no means in every case; it was generally found competent of itself to the performance of all that was required of it. In forty-two cases, treated by my partner and myself, not one fell a victim to the disease." "Hydras are not to be destroyed by straws, and we accordingly began always with the exhibition of a bold dose at once, and rarely had any trouble with the disease afterwards. Instead of giving twenty or thirty grains of calomel at intervals, until one hundred were taken, we gave the one hundred at once, and never had any cause to repent it." †

Cholera appeared in Lexington, the second time, in the beginning of June, 1833. Professor Cooke, after much experience in the disease, says:—"Like all forms of disease of hot weather, cholera is to be cured by producing and keeping up a free secretion from the liver, and its discharge from the bowels.—The best remedy

* Western Medical and Physical Journal, 1832, p. 358.

† Remarks on the Cholera in Louisville, by T. S. Bell, M. D.; published in the *Transylvania Journal of Medicine*.

with which to effect this object is calomel, in every form of such disease.”

“Such dose as was deemed likely to produce bilious discharges, was given as soon as possible.

“*In every case*, if the calomel was rejected, or a large portion of it, *rendering the result uncertain*, the full dose was immediately repeated, as often as rejected, until one remained. The second was very seldom rejected, *if given immediately*.

“The best way, it is believed, to administer calomel, is in a teaspoonful of brandy, with a little sugar and water. It is very easily taken also in clabber, either mixed with it, or between two thin layers of it.

“If this dose was a sufficient one, *fully adequate to the emergency*, the first effect observed was an entire cessation of the watery discharges in a few hours—the second observed, was the production of bilious discharges in the usual time calomel takes to operate.

“In this case the discharges were kept up by sufficient doses of aloes (in tincture* or in pills, sometimes combined with rhubarb, sometimes with scammony), day by day until they ceased to be bilious, and became natural in all respects.

“In some few cases, when the calomel had so far acted as to suspend entirely the watery discharges, after waiting twelve hours, even though there was no discharge of a bilious character, the aloes was administered.

“If, notwithstanding the first dose of calomel, the discharges continued unaltered at the end of six hours, the full dose was repeated; and the same at the end of every six hours afterwards, until there was an entire stop to them: after which bilious discharges appeared in the usual time, in about twelve hours, and generally less. The case was thereafter treated with aloes, &c. as before stated.

“If the case was pressing and the discharges very great, the dose was repeated at shorter intervals, according to the urgency of the symptoms.

“In some few cases, there was not an entire stop put to the discharges, so as to leave an interval of some hours between them and the bilious passages, as above stated—but there was a gradual change from a watery to a bilious discharge, manifested in its first

* The tincture is made by infusing an ounce of aloes in a mixture of one gill of spirit and three of water.

approach by a corresponding change of color, though they were still copious, the calomel was withheld; and they in every instance gradually became consistent—when it became necessary to administer aloes, &c. as before mentioned.

“The first object, in short, in every case, was to bring the patient to discharge bilious matter, by the use of calomel alone. The second was to keep up that discharge day by day as in bilious fever; and in every case in which these two objects were effected the patient recovered.”

“While the patient was warm, he was encouraged to eat at his pleasure, small bits of ice. They manifestly tend to quiet the stomach. Cold water causes vomiting—the patient cannot take enough to cool his thirst. Ice is a high gratification, and is in no way injurious.

“Filling the stomach with any thing tends to produce vomiting and interferes with the operation of the medicine. Until, therefore, the first object is effected, the production of bilious discharges, the patient ought to take nothing. The struggle is for life, and it will soon be decided.

“When the patient becomes cold, and his pulse fails, camphorated spirit of wine, a few drops every few minutes on a lump of sugar—brandy and water—and mint julep, were used—the first is perhaps best.

“When profuse perspiration covers the face and body, the attendants should wipe it off gently, as fast as it appears, *with warm flannel cloths* of the size of a handkerchief, for the sake of the comfort of the patient, who is encumbered too much by larger ones. If the perspiration is not wiped off constantly, the evaporation tends rapidly to make him too cool, and hasten his death.

“When he is cramped, he should be rubbed with a plenty of camphorated whiskey.”

“Throughout, his room out to be kept as quiet as possible.

“The writer has never used opium with calomel, because he is persuaded that the quiet obtained in this way is delusive, and that the patient and even the physician is often persuaded there is an improvement, when the morbid internal condition is not changed, and sooner or later shows itself in unexpected relapse and sudden death, or in lingering complaints which eventually terminate in the same way.

“He has never used emetics, because he feared that if the dose should not prove decidedly emetic, the purgative effect which in that case emetic medicines exert, would injure the patient. With

a remedy in his hands which he had scarce ever, perhaps, known to fail, it would have been the height of imprudence to have resorted to an untried one. Resting, therefore, on past experience of the admirable effects of calomel in cholera, he administered that alone, and has had no reason to regret it in a single instance.” *

Professor Yandell, who was actively engaged in the duties of his profession during the prevalence of the epidemic in Lexington in 1833, who had great experience in the disease, and who suffered from an attack himself, states the result of his experience as follows:—“To a number of my first patients I administered an emetic before giving calomel. I employed warm salt and water, with the addition, occasionally, of ipecac. or mustard, a tumbler full at a time, repeated every minute or two, until the effect was produced. It was always desirable that free vomiting should take place in the course of fifteen minutes, and that the operation should soon be over.” “If the patient had just taken a meal the emetic had the effect of dislodging the undigested food; but the effect aimed at in the administration of this remedy was beyond this. It has been mentioned that the pulse was uniformly below par, the skin cold, and bedewed with perspiration, and the countenance pale and haggard, all which symptoms evidenced a deep-seated congestion.” “The emetic was given for the two-fold purpose of preparing the stomach for the reception of calomel, and giving a salutary impulse to the circulation. The skin generally grew warm under its operation, a profuse perspiration broke out, and the pulse became full and natural. When administered at a more advanced stage of the disease, I have seen emetics relieve the spasms promptly. I have given them with advantage, upon the occurrence of spasms, several hours after calomel had been taken, but before it had operated. I may add, however, that I ceased to use them so generally after the first weeks of the epidemic, *without finding the result of my practice less satisfactory.*†

“Called, for the first time, to a patient with these symptoms, (dirty rice water discharges, spasms, profuse perspiration, and acute pains in different parts of the body,) when I did not deem the salt emetic advisable, I gave, at first sixty grains of calomel, and in an hour or two, according to the urgency of the case, one hundred and twenty more. In my own case, when attacked with considerable severity, I took this quantity in less than three hours, after taking

* Cooke's Medical Essays, p. 213—14—15—16—17.

† Yandell on Spasmodic Cholera, p. 13.

an emetic. And in some very violent cases, I even transcended these doses. To one patient, in whose case vomiting was a distressing symptom, and who was cramped in almost every muscle, I gave an ounce at three doses.—In the course of the night the character of the stools was changed. She continued to pass dark, green matter for forty-eight hours, and recovered rapidly, with scarcely a slight salivation. Besides calomel, on account of the distressing vomiting, this patient took laudanum for a few hours. It did not, however, sensibly check the discharges, or allay the vomiting. These were only relieved by the operation of the calomel.

“In spite of our remedies, though given on the accession of the first symptoms, the disease very often ran on into this stage. Under these circumstances, there was always cause to apprehend the near approach of collapse, and hence it was important to arrest it as speedily as possible. And as my chief reliance was upon calomel, I gave it always in increased doses—from sixty to one hundred and twenty grains, and repeated it, according to circumstances, every two or three hours. A frequent repetition was, however, not often demanded, the patient being either relieved or dead in a few hours after the access of this stage. In a few cases I repeated the emetic at this juncture, before administering calomel, with the effect of relieving the spasms.

“By this course I generally succeeded, and my confidence in it is such, that under the same circumstances, I should resort to it again.”

“In addition to the remedies already mentioned, I generally directed mustard poultices to the extremities, where they were disposed to grow cold. It was also necessary to employ rubbing when there were spasms. If vomiting existed, mustard was likewise applied over the epigastrium, and laudanum given, or ice, or iced water, or lemonade, which I believe was more effectual than the opiate. It was a most grateful remedy to the patient, and in my experience, always harmless, if not beneficial. In several instances I was induced by the vomiting, and the profuse evacuations from the bowels, to employ laudanum, but I rarely, if ever, derived from it any unequivocal advantage.”

“A patient laboring under collapse from cholera, presents one of the most hopeless cases of disease. With pulseless wrists, skin as cold as marble, cold tongue and breath, shrivelled hands, and livid, contracted features—with only respiration continuing to show that life is not extinct, our remedies are almost as inert, as if poured into a body already dead.” “Nevertheless, a few were reclaimed from this extremity of the disease. Mr. Hale, an

esteemed pupil of mine, was called, during my illness, to a female laboring under cholera in this stage. She was poor, and being remote from the populous part of the city, had received no attention. He gave her two hundred and fifty grains of calomel, applied mustard to the extremities, and left her for the night. When he called next morning, contrary to all expectation, the calomel had produced the desired effect, and the patient was relieved. She has recovered completely."

"From the repugnance of many persons to large doses of calomel, I was obliged in a few cases afterwards, to commence with small doses. And, as stated, this course very often succeeded; but now and then the case proving obstinate, it was found necessary to increase the quantity in the manner above referred to. In nearly every instance where sixty or a hundred grains were given at first, the effect was that of an opiate upon the bowels—arresting all discharges until bilious matter began to pass off.

"In using this article thus liberally I had but one fear—that of salivating the patient, and when it had operated favorably, aloes freely given kept up the secretion of the liver, and obviated this difficulty.—Calomel, it is well known, is one of the most insoluble of substances, and though administered in large quantities can enter, in any reasonable time, but sparingly into the circulation. Hence the danger of ptyalism (salivation) is not in proportion to the quantity taken, while I have experienced that the certainty of its operation is. Such being the case, and since hypercatharsis (excessive purgation) is not one of the consequences to be dreaded from it, it appeared to me but reasonable to employ the remedy, in which I had most confidence, in the most efficient doses."—"No one of my patients was seriously salivated. Their convalescence has been as rapid as that of others who took less calomel. In no case have I seen what is termed *bad health*, as a consequence of it. On the contrary, those who suffered last season, as well as those who were affected in the late epidemic and survived, are now enjoying their usual health, and some have even felt it improved by the course of medicine." *

Epidemic cholera prevailed in Versailles, Indiana, and its vicinity, in the summer of 1833, with great violence. Dr. W. T. S. Corbett details his practice and the result, as follows:—

"I may say, that from an extensive practical experience in this disease, calomel in large doses is the only remedy, which has

proved successful in my hands. I was led at the onset of this disease, to an apparently extravagant use of this article, from the entire suppression of the biliary and other secretions. At first I used opium in conjunction with calomel, with the view of restraining the watery evacuations from the intestines, but soon ascertained that calomel alone was sufficient, when given in proper doses, not only to restore ultimately the lost secretions, but at once to arrest the diarrhœa, and save from the impending collapse. I therefore abandoned opium as useless, and saw some cases in which it was manifestly injurious. I commenced the treatment in most cases with an emetic, with a view of clearing the stomach of all crudities; for which purpose I used common salt, and mustard, or the latter alone. This emetic always acted promptly, and possessed the advantage of not producing that debilitating nausea common to the antimonial preparations. I then commenced giving calomel in doses of fifty to a hundred grains, every hour or two, until diarrhœa was arrested; then the dose was reduced to twenty-five grains every two hours, until ptyalism was effected, which was always followed by a restoration of the secretions in general, when the patient was out of danger. I will here remark, that out of largely upwards of a hundred cases, I lost but one patient who had sore mouth, and that was dry inflammation of the gums, perhaps a local affection, as the breath was destitute of mercurial fœtor.—After having arrested diarrhœa, and reduced the calomel to twenty-five grains every two hours, if it returned, I immediately increased the quantity, until the intestinal effusion was again arrested. There is a constant tendency to a return of this symptom until the secretions are restored, and it should be strictly watched, and immediately counteracted when it occurs. Upon this depends the success of the treatment. The intestinal effusion is the chief cause of the collapse, and when this is held in check, there is no fear of immediate death. I used blood-letting and blistering in some cases, but with no marked good effect. When spasms were present, I found advantage from large sinapisms to the extremities and epigastrium. The mustard emetic was the most valuable for cramp, acting in most cases like a charm, driving the circulation to the surface, and completely throwing off the spasms. I used many auxiliary means in the earlier part of the epidemic, but soon abandoned them as useless. Calomel—and calomel alone—is the great *sine qua non*, in the treatment of this disease; and will, when properly administered, cure forty-nine out of fifty cases, without auxiliary treatment. This remark is not carelessly made, but with

entire confidence in its truth, derived from careful observation at the bed side. Out of largely upwards of an hundred cases, I lost ten, eight of whom were not seen until a late date. Lest it should be judged that the disease here was unusually mild, I will remark, that at the Cross Plains, a village nine miles south of Versailles, every case terminated fatally, until the above practice was adopted at my instance; after which, not a case was lost, where the treatment was early attended to.”*

Cholera appeared in Shelbyville, Tennessee, on the 29th of June, 1833, and was attended “with almost unprecedented mortality.” Dr. Henry Yandell in his account of the disease in that place, says:

“In the treatment of the disease my reliance was chiefly on calomel, and in its administration I was only governed by the effects produced. I believe I may affirm, that this was the only practice, (pursued also by several of my brethren) which succeeded in a solitary instance. Calomel alone seemed competent to allay the gastric irritability, and check the watery passages. The dose required was various. In some cases we found 100 grains sufficient. In others we were obliged to give it in larger doses—from 100 to 900 grains. When called in early, in no instance did I lose a patient who took the latter dose. Through neglect to keep up the proper discharges, a few persons were allowed to die of a low form of fever, after bilious purging had been established. This was always the result of bad management. When once dark green, consistent passages were procured, I considered the patient out of danger, with proper care. I did not indulge my patients in drinking, finding the gastric distress and vomiting increased, rather than allayed, by the use of liquids.†

Salem, Indiana, and its vicinity, were visited by cholera about the beginning of June, 1833, where it prevailed for sometime with a violence and fatality not exceeded, perhaps, in any part of the United States. Dr. Charles Hay in his account of the disease in that town and neighborhood, makes the following remarks in reference to the treatment successfully instituted by him:—

“The entire want of biliary secretion in the commencement of this disease, must impress every practitioner with the necessity of using means to restore this important function of the animal economy. What are the remedies best calculated to produce this effect? Some contend for the efficacy of emetics, and I am of opinion that in our common epidemic bilious fevers and dysenteries, no

* Western Journal of the Medical and Physical Sciences, vol. VIII. p. 9.

† Transylvania Journal of Medicine, vol. VII. No. 1.

remedy is productive of better effects, but as far as my experience enables me to judge, calomel, uncombined, except in some cases, with a little opium, merits a decided preference in the treatment of cholera. As to the quantity, I am fully satisfied that we should be governed wholly by the effect to be produced. In this matter we must not be led astray by even the high authority of those who protest against what they are pleased to term *excessive* doses, but should recollect that no dose is *excessive* which does not produce an *excessive effect*, whether that dose be one, or one thousand grains. The reader will recollect that in the first case which I have given, 30 grain doses of calomel were administered until upwards of 400 grains were taken. I soon discovered that it was necessary to give larger doses, and to repeat in less distant intervals, until the effect of checking the watery discharge was produced. Sixty grain doses were then exhibited, but these also failed very frequently; so that I resorted to doses of a teaspoonful, or about 100 or 120 grains, repeated at the same intervals until the change in the secretion was effected.”—“In cases attended with great irritability of the stomach, and great thirst, in which even water could not be retained, I derived considerable advantage from cold affusions on the upper part of the body. I did not use pellets of ice, as none could be obtained. After the irritability of the stomach had been reduced by the affusions, I gave a teaspoonful of calomel, and repeated it according to circumstances, with or without opium. This dose may appear very large to some, but the only source of regret relative to it is, that I did not commence earlier in my practice in this disease to give doses of this size, or even twice or thrice as much. The prejudice against large doses of calomel, it is to be hoped, will soon suffer the fate of that against the use of cold water in fever. The fear of inordinate salivation I think is unfounded. One of the severest cases of ptyalism which I had to encounter during the prevalence of the cholera, was a case in which but a single dose of 30 grains had been given, while others took as much as five, seven, eight hundred, and a thousand grains without being at all salivated. I have often witnessed the happy effects of a large dose of calomel after a small one had been tried in vain.”*

After the ample details given above, in regard to the treatment of cholera by calomel, it would appear almost needless to adduce further testimony of its success; but the desolation which attended

* Transylvania Journal of Medicine, vol. VII, p. 49, 50.

its march through the United States was so extensive, and the treatment generally so inefficient and unsettled, that it is of the utmost importance that the public should be satisfied with respect to the only treatment which has been attended with *signal success*, and that the facts in regard to it should be widely disseminated. I shall, therefore, in addition to what has been already stated, introduce some of the facts given by Dr. Perrine, in his narrative of the cholera in Yucatan, where it prevailed from the 24th of June to the 21st of July, 1833. He says:—

“On the 20th of July, at night, I went to the College of St. Joseph, to stay with some convalescing priests. They carried me into a room, where lay a servant, who having been attacked in the morning, had taken during the day, three doses of twenty grains of calomel and one of opium, but had vomited all. His skin was cold as marble—he had not the slightest trace of pulse—his cramps were very violent—he was very thirsty, and had that restlessness which generally betokens the approach of death. I therefore told them to let him die in the cool net hammock in which he desired to be, but at the same time related what the lady had done to her female servant, when I had refused to prescribe. As he had no pulse at all, he was considered a still more legitimate subject for experiment. He was allowed to drink as much cold water as he pleased, and by midnight had taken twelve doses of calomel of forty grains each, after which he vomited and purged no more. His pulse did not return till twelve hours afterwards, but without any thing else he got well and so remains at this date.”

“If opium is an advisable auxiliary at all in cholera, it is likely indicated by pain alone. If calomel alone will cure the cholera in one case, it should cure the cholera in all similar cases without opium. If the irritation is calmed, and the spasms are counteracted in one case, by large doses of calomel alone, why not in all cases by the same remedy alone? If it requires a certain quantity of this medicine, to counteract all the symptoms of cholera, why not give the whole quantity in the shortest possible time? The opium which I have used as an auxiliary in cholera, has been more in conformity to the opinion of others, than of myself.”

“The treatment by calomel alone, is so very simple, that I should hereafter say to the public: Have an ounce of calomel in every house, made up into ten grain pills. As soon as an individual is attacked with watery purging or vomiting, give him four to eight pills (forty to eighty grains,) according to the violence of the symptoms, and repeat the same quantity after each copious or debilitating

discharge from the mouth or anus. Cover the patient with as many blankets as may feel comfortable. Let him take any drink of any temperature that is most agreeable to his taste and stomach, as often as he pleases, but not in such quantities as to provoke vomiting, say in table-spoonsful at a time. Rub his spine well with coarse dry cloths, as long as cramps or vomitings occur. You *may* add red pepper to his ankles, over his stomach, and along his spine, till the physician arrives. To the physician, I should say, when you arrive at a patient thus treated, his vomiting, purging, and spasms will have probably all ceased, heat will have likely returned to his extremities, and his whole surface will as likely be covered with a warm sweat; in short, you will find him convalescing, instead of dying. *But* although vomiting and purging, both may have ceased, and the friends may not, therefore, have given more than one dose of calomel, you may occasionally find the patient still sinking, his face emaciating, cooling, pulse failing, &c. in short, with all the other symptoms of exhausting cholera. In this case, the flow of serous fluid into the intestinal tube has not ceased, and is exhausting him as rapidly as an internal flow of blood. In weakly or weakened habits, a small quantity of either extracted from the vessels, will prove fatal to the system, whether retained in, or discharged out of the cavities of the body. If this secretion into the intestines be not speedily arrested, your patient will speedily die with his bowels full of water. Repeat, then, the calomel, every fifteen or twenty minutes until natural warmth and moisture appear all over the body and extremities. We do not hesitate to give enormous doses of opium in colic and tetanus—why shrink from giving proportionable doses of calomel in the rapidly fatal cholera? You will find that while it calms irritation, and checks excessive secretion in one set of organs, it increases action, and opens the deficient secretions in others. The greater the dose, the greater its anticathartic effects.”

“By-the-by, I had almost forgot to say that one of the greatest advantages of the calomel cures, is, the durability of its effects, so that a relapse is scarcely ever known. Under other treatment, one-half of the patients nominally cured, died of relapses, or had a lingering convalescence. Those who object to the use of calomel for fear of a salivation, are unworthy of a serious answer. Admitting that in all cases it should occur and be in proportion to the quantity taken, I say, better a sore mouth than a cold grave. But in the majority of cases, salivation does not occur, and is no more liable to follow five hundred and fifty grains of calomel—if indeed

as liable as five grains. I have seen much worse mouths after very small than very large doses of calomel—the latter operating most generally on the skin or the kidneys or both.” *

Madison, Indiana, suffered from cholera in the years of 1832, '33, '34, and '35. It prevailed to as great an extent in the summer of 1835, as in any town in the United States, according to the number of inhabitants. It commenced about the 14th of June, and continued with great violence for four weeks. During this period, Dr. Rogers and myself treated upwards of one hundred and twenty patients in the town and vicinity, in various stages of the disease. Of this number only three died. It is unnecessary to enter into a detailed account of the treatment pursued by us, as it was essentially the same with that already given. Calomel in large doses was the only remedy depended on; and it never, except in the cases referred to, failed to answer our expectations. The first dose given was generally sixty grains; and if it failed to arrest the vomiting and watery discharges from the bowels in one hour, 120 grains was administered: and the same quantity repeated every hour until vomiting and watery purgation ceased.

It was seldom necessary to give more than two or three portions of calomel, as that amount, given in the course of one or two hours, was found competent in almost every case, to arrest the disease, and restore the deficient secretions. When called at an advanced stage of the disease, the first dose of calomel was ordinarily one hundred and twenty grains, and sometimes two hundred and fifty; repeated every half hour or hour as circumstances required. The object was to put a speedy termination to the vomiting and diarrhœa, and to set up the secretion of the liver. This was attained in a great majority of cases by one hundred and twenty grains, promptly administered at the onset of the disease; and in nearly all the remaining cases by two hundred, or two hundred and fifty grains; some few patients required three or four times that quantity.

After bilious evacuations were procured, they were kept up by aloetic purgatives, until health was restored. In every instance, convalescence was speedy and complete.

Emetics of salt water, mustard, or ipecacuanha, were resorted to in a few cases, where there was reason to suspect the presence of crude articles in the stomach which might interfere with the prompt action of the calomel. Mustard cataplasms were generally applied

* Western Journal of the Medical and Physical Sciences, Vol. VII. No. 27.

to the pit of the stomach and calves of the legs, and occasionally along the course of the spine, with evident advantage. In short, the adjuvant treatment was about the same with that recommended by Doctors Cooke and Yandell.

Dr. Hodges informed me, that he pursued the calomel treatment in the first cases he was called to see with success; but failing afterwards in three or four cases which were in the stage of collapse before he saw them, he became discouraged, and resorted to the treatment recommended by Dr. Jackson of Philadelphia, of camphor, morphine, and small doses of calomel. Every patient treated by him according to Dr. Jackson's method died. He returned to the calomel again; after which he did not lose a patient.

The disease was treated by us in every stage—the symptoms varying, in different patients, from frequent, profuse, watery diarrhœa, to those enumerated by Dr. Perrine in the case of the servant at the college of St. Joseph.

Astringents have been much relied on by many practitioners for restraining the diarrhœa, but with little success. In relation to their administration *per anum*, Dr. Henry makes the following remark:—"Astringent injections to restrain the diarrhœa, were, by some of my friends, thought worthy of confidence, but they should be considered merely as temporary expedients, to gain time for the calomel to exert its specific influence on the liver. *Calomel is the best astringent.*"

The same gentleman remarks:—"On the subject of preventive means, I think there is much parade of usefulness with but little real utility. Warm comfortable clothing, consisting of flannel next the surface, and of woollens generally; warm sleeping, whether on beds of down, or on some harder material; an abundance of good wholesome food; with those beverages which nature has prepared, milk and water, or those which are prepared from coffee or tea; together with such vegetables and fruits as are ripe and nutritious; all of course with moderation; with attention to personal, domestic and city cleanliness; and constant, incessant and engrossing occupation:—these are the means, and, in my opinion, the only ones which deserve to be enforced, and the observance of which would be worth the trouble and expense.

"And if to these be added, 'a heart without fear and without reproach,' every thing will have been done which human agency can effect, to arrest the threatened calamity."*]

* A Letter on the Cholera, by John F. Henry, M. D. p. 28.

DIARRHŒA.—LOOSENESS.

[*Symptoms*.—Frequent purging of liquid stools, often thin and watery; milky; mucous, occasionally tinged with blood; or feculent; no pain; occasional nausea, with loss of appetite.

Causes.—Presence of acid or unwholesome diet in the stomach and intestines; vitiated bile; cold; wet; obstructed perspiration; foul air; worms; a change from drinking limestone-water to rain or river-water, and the reverse; repelling eruptions on the skin; a consequence of other diseases.

No disease is of more frequent occurrence than diarrhœa, from the various causes enumerated; nor is less attention paid to any other disease, until the subject of it is completely prostrated by debility, the stomach and bowels having entirely lost their tone, and one vital organ after another fallen a prey to disease which might, perhaps, at the onset, have been entirely cured by a single dose of medicine, in conjunction with necessary attention to diet and dress, and avoiding exposure to the most common causes. It should not be neglected even for an instant; a resort to such remedies as are calculated to eradicate the complaint should be had as soon as it makes its appearance. No temporizing remedies, such as check it only for the time being, can be depended on. Strike at the root of the matter at once. Thousands of lives are sacrificed yearly, especially among children, by perseverance in the use of temporary expedients.

Treatment.—In the treatment of diarrhœa, due attention should always be paid to the cause of the disease. If there is reason to believe that acrid, irritating substances are contained in the stomach, or if the diarrhœa be attended with nausea or vomiting, or is of long standing, give an emetic of ipecacuanha or flour of mustard, so as to produce full vomiting. By this course two indications are fulfilled in addition to freeing the stomach of its irritating contents, the inordinate action of the bowels is checked, and a determination to the skin is produced, a course of things much to be desired. As the action of the liver is either suspended or perverted in this complaint, such medicine should now be resorted to as will restore the healthy secretion of that organ. For this purpose calomel is the surest and best remedy; from ten to twenty grains, in proportion to the violence of the disease, may be given in the course of six or eight hours after the emetic. It should be given early in the morning, or at bed-time, if circumstances will permit. If the

purging be very profuse and frequent, from ten to fifteen grains of Dover's powder may be combined with it; or, if that is not at hand, administer a dose of paregoric elixir, or laudanum. In eight or ten hours after the administration of the calomel, give a dose of rhubarb to assist in carrying off the secretions produced by it. When it is found that one dose of the medicines named is not sufficient to arrest the disease, do not throw them aside, and resort to new ones, but continue the course until the effect is obtained.

The extract of the inner bark of the white walnut or butternut tree may generally be substituted for the calomel after two or three doses have been taken; the only objection to its use, being its tendency to nauseate; this, however, is of no disadvantage, where great irritability of the stomach is not present. Rhubarb is one among the very best purgatives in this complaint; as it does not produce watery stools, and imparts tone to the bowels, instead of favoring debility, as many other medicines of that class are apt to do.

In the ordinary bowel complaints of children, a combination of calomel, ipecacuanha and Dover's powder or opium, will be found the most efficacious remedy, after the bowels have been cleared of their irritating contents by rhubarb or castor oil. Two grains of calomel, one-fourth grain of ipecac., and one-eighth grain of opium combined may be given every four hours during the day and night, to be followed the succeeding morning by a dose of oil.

I have rarely seen good result from the use of astringents and tonics when given for their specific effect. Dover's powder, opium, ipecac., and rhubarb, produce all the good effects of astringents, and none others need be resorted to. I would also caution the reader against the use of absorbent mixtures of every description. They are never of *permanent* benefit, and often do irreparable injury, by delaying the use of effectual remedies.

When worms give rise to the diarrhœa, which may be told by the usual symptoms of their presence, the case must be treated as directed in the article "Worms."

The temperature of the skin should be maintained by every means calculated to effect that object. The patient should wear flannel next the skin from the elbows to the feet, and sleep in dry, warm blankets. In cases accompanied with great debility much benefit may be derived from rubbing the abdomen with cloths wet with warm whiskey or brandy once a-day.

The greatest attention should be paid to diet. It may consist of such articles as are recommended in *Dysentery*, with the addition of boiled milk and rice. The drinks should also be the same.]

LIENTERY.—PASSING THE FOOD UNCHANGED.

[*Symptoms.*—The food passes off in a few minutes after it is taken, almost undigested; the common symptoms of diarrhœa are almost always present.

Cause.—Excessive excitability or irritability of the stomach and bowels.

Treatment.—Children are more subject to this disease than adults; and those of weak, relaxed habits, or who have suffered long from diarrhœa, are most liable to its attacks. The general treatment of diarrhœa is also proper in this complaint, especially where looseness has preceded or accompanies it. Where the diarrhœal symptoms are not conspicuous, gentle emetics, weak solutions of soda, and rhubarb tea may be given; followed by the use of elixir vitriol, and bitter infusions of centaury or chamomile; with an occasional dose of calomel at bed-time, to correct the secretions of the liver, which is always deranged, shown by the evacuations being uncolored by bile.

Diet, however, is of more consequence than physic in the treatment of lientery. Two indications are to be fulfilled; first, to use the least stimulating articles of diet; and, second, to have the diet of the most digestible and nutritious character, and such as will not offend the stomach. No solid or vegetable food should be taken; with exception of the Irish moss, which is a most valuable article in this as well as all other diseases of the alimentary canal. All the animal jellies are good. One of the best methods of preparing food for such patients is, to take a young chicken, mash its bones, and boil it in a quart of water down to three gills; skim the top; strain it, and let it cool. By this means an excellent animal jelly can be obtained, containing a great deal of nutriment in a small quantity of food; a desideratum of some moment in all such cases. Potatoes are generally looked upon as a most excellent and unirritating article of diet, and from the excessive fondness of children for them, they are frequently allowed to eat them in such cases. So far, however, are they from being innocent and proper food in this complaint it will often be found that potatoes pass the bowels unchanged when almost every other article eaten is digested. Nothing should be more carefully guarded against than their use in lientery.]

DYSPEPSIA.—INDIGESTION.

[*Symptoms.*—Irregularity or want of appetite; occasional nausea; heartburn or pain at the pit of the stomach; flatulency of the stomach and bowels; eructations of sourish or other unpleasant tasted fluids; oppression at the stomach after eating, the food being often thrown up by mouthfuls in a half digested state; costiveness; occasionally, colic pains; and general languor and debility. After the disease has lasted some time, the pulse becomes tense and quick, the upper part of the abdomen tender to the touch; and the mind discontented, irritable and desponding.

Causes.—Overloading the stomach; cold; moisture; too frequent indulgence in the use of spirituous liquors; want of air and exercise; excessive evacuations; sucking children too long; emotions of the mind; other complaints.

Dyspepsia is the most frequent of all diseases, and although not of a highly dangerous character, yet the sufferings of its victims solicit the sympathy and skill of the physician, far more powerfully than the subjects of many of the more violent diseases.—Every age, and class of society, are subject to its attacks. While other complaints are driven away by the change of seasons, or meliorated by climate, dyspepsia holds continual reign, through all seasons and in every region, poisoning every source of enjoyment, and shrouding its victims in gloom and despondency.

While every case of dyspepsia might be cured, it is rarely ever ameliorated. It is true, the most urgent and distressing symptoms are occasionally palliated, but a radical cure is seldom effected; the patient dragging out a miserable existence; the very name of his disease, from mistaken but prevalent notions, shutting him out from even the sympathy of his fellows.

The great number of dyspeptic cases unrelieved, has served to cast much unmerited opprobrium on the science of medicine, and is, indirectly, a most fertile cause of the growth and spread of empiricism. But the weight of the opprobrium should fall, not on the shoulders of medical science, nor on medical advisers, but on the patients themselves. It is perfectly useless to attempt to cure this disease, unless the invalid is thoroughly convinced of the necessity of changing his customary habits, and adopting a new rule of conduct; and determined to persevere in it to the end. He has been engaged for years, perhaps, in bringing on his complaint,

and he cannot reasonably expect to have it cured in a few days or weeks.

The cause of indigestion is generally referred to debility of the stomach alone. Such, however, is not the case; the stomach is not the only organ concerned in digestion; and, in most instances, it is only affected in common with every other organ engaged in the digestive process. It may be, and doubtless often is, the first to suffer, as in the case of gormandizers, or where persons are addicted to the use of drugs and indigestible food; but it cannot suffer long without other organs becoming implicated.

Treatment.—The cause giving rise to the disease in each particular case, should be diligently sought out, and ever after carefully avoided. In this country, what is termed “bolting” the food, or swallowing it very fast, and almost wholly unchewed, is one of the most common causes of indigestion. It is saving time at a most wasteful expenditure of life. By this course, the individual is led to eat double the quantity that he would, were he to masticate his food well; while, at the same time, he imposes upon the stomach not only its own proper labor, but that of the teeth also. In recent cases, where dyspeptics find themselves addicted to this habit, eating slow, and at regular hours, chewing the food perfectly, and rising from the table before the appetite is satiated, will generally be sufficient to remove all the symptoms of the disease; and perseverance in this course will ensure a continuance of good health.

The health of an individual is commonly judged of from his appetite—the more he eats, or desires to eat, the louder are the congratulations of his friends on account of his good health. This is a fatal mistake. It is so far from being true, that some of the most miserable dyspeptics that have fallen under my notice, had, at times, appetites so ravenous, that it was utterly impossible to satisfy the morbid cravings of hunger by any amount of food. The body is not nourished and invigorated by the quantity of food taken into the stomach, but by the amount thoroughly digested. Consequently, where the digestive powers are weakened, and unable to bear hard labor, as in this disease, common sense would teach us to lighten the burden—to regulate the quantity and quality of diet in accordance with their impaired energies.

But, a sudden change from a full, to a light, scanty diet, in cases where individuals have been accustomed to eating large meals, must not be attempted. The change must be gradual, and the reduction in quantity made daily, until the stomach is capable of

managing all that is eaten, which may be known by a conspicuous amendment of all the symptoms. This matter can only be determined by experiment in each case. If a greater amount of food can be thoroughly digested than is taken, it ought to be increased; for too small a quantity, in such cases, will only add to the general debility. Experiment, also, in a majority of cases, must determine the kind of aliment taken—the best general rule being, to use such articles as set lightly on the stomach, without giving rise to vomiting, heartburn, or eructations; or being followed by a feeling of heaviness or dull pain several hours after eating.

Often, nothing is complained of except costiveness, and inability to eat certain kinds of food. In such circumstances, nothing more is necessary to a perfect cure than to obviate the condition of the bowels by appropriate medicine, and avoid eating the food giving rise to dyspeptic symptoms. It will generally be found, that when the bowels have regained their tone, and perform their duties without the aid of medicine, the patient can use every description of digestible diet with impunity, provided he takes care to avoid the exciting causes of the disease. However, if he falls into costive habits again, the dyspepsia will return.

When the disease arises from excessive use of spirituous liquors, tobacco or opium, the treatment is obvious—*abandon them*.—Snuff taking, in particular, is said by Dr. Cullen, from personal observation, to be unfavorable to digestion; and he mentions several cases of habitual want of appetite cured by leaving off the use of snuff. In cases of extreme weakness, one article of food alone should be used, as the stomach is more capable, under such circumstances, of managing a simple than a compound diet. In general, it will be found that crackers, with a little milk at noon, are preferable. Milk will often disagree with the stomach at first, but a few days' use of it will remove that difficulty. Fermented bread will always increase the violence of the symptoms. Bran bread, and that made of rye meal, have acquired great celebrity in this affection; which is, I apprehend, owing altogether to the husk of the grain possessing a slightly laxative property, and, to dyspeptics being induced to continue its use much longer than any other simple diet, from an idea that it possesses some occult quality. As before stated, however, it is impossible to prescribe a diet suitable to every case. Saccharine matter, in every form, has been supposed to be peculiarly noxious in dyspepsia; yet, Professor Charles Caldwell, who was much troubled with dyspepsia when young, says he took forty gallons of bitters and tonics in the course of a year

without experiencing any amendment, and was then perfectly cured in three months while living almost entirely on *pound-cake*. Small meals of well boiled animal food, taken once a day, at noon, and well masticated, will be found preferable to other diet in most cases. Partake of one dish only at a meal, and use no drink at eating, nor for at least an hour afterwards. Avoid taking exercise immediately after eating, in order to let the whole energies of the system be concentrated in the stomach. Condiments are not admissible in any case. They create a factitious appetite, and induce the invalid to eat too much, without giving any aid to digestion. If the tongue be red, with a somewhat swelled abdomen, and tender to the touch, or a disposition to feverishness manifests itself, animal food is entirely inadmissible. Here the simplest diet is the best.

When dyspepsia arises from sedentary occupations, it can only be relieved by a change of business, or taking frequent and regular exercise. Walking is the best exercise; next to that riding on horseback; or active manual labor for an hour or two morning and evening. It must, of course, be proportioned to the strength of the invalid.

In cases arising from mental emotion, as grief, anxiety, &c. or general despondency, nothing will contribute so much to a restoration of health, as a change of scenery and companions; hence, visits to watering places, travel, and frequenting cheerful company, will always be found to produce the happiest results.

Dyspeptics should make it an invariable rule to rise with the sun, and retire to bed early. Their dress must be adapted to the weather, and should always be of a warm, dry character. The more frequent occurrence of dyspepsia in the beginning of winter will show the importance of this.

The medicinal treatment of this disease is plain and simple. Much medicine is to be avoided, but a regular and constant use of it is indispensable. It must not be taken for a day or two, and then postponed a week. Without perseverance no good will be obtained. The most distressing symptoms should be palliated; taking care not to lose sight of the main object—the entire restoration of the debilitated organs to their proper tone.

In cases of simple languor and debility of the stomach, with flatulency, a tea-spoonful of white mustard seed, taken two or three times a-day, is highly spoken of as a remedy, in conjunction with diet. When there is great acidity of the stomach, lime water taken in sweet milk will give temporary relief; magnesia, however, is preferable, for while it corrects the symptom, it relieves the

torpidity of the bowels. Many cases are reported where magnesia taken every day has effected a cure. I have found heartburn more constantly relieved by the use of minute portions of sulphuric acid (oil of vitriol) than by any other remedy. One or two drops of the acid to an ounce of water, of which a teaspoonful may be taken every half hour, will rarely fail to give entire relief.

As habitual costiveness, alternating with occasional diarrhœa, accompanies dyspepsia in all its stages and aspects, attention to it is a matter of the first consequence. Violent purgatives are not to be resorted to. The object is not so much to *purge*, as to simulate, as far as possible, by the use of medicine, the natural action of the bowels. For this purpose, in ordinary cases, nothing will be found better than pills made of equal parts of rhubarb, aloes, and the sulphate of iron, (common copperas,) of which a number sufficient to procure two or three free, consistent evacuations of the bowels during the next day, are to be taken at bed-time. They must be used every night, or every other night, without intermission, until the disease is cured. Instead of causing debility, as some may apprehend, the patient will constantly gain strength under their operation. In cases attended with fever, small doses of ipecac. and aloes (1 gr. of ipecac. to 3 of aloes,) taken every three or four hours during the day will be found preferable.

Where yellowness of the eyes and skin is present, calomel or blue pill, in moderate portions, should be united with the regular purgative; taking care not to induce salivation; which may be avoided by ceasing their use at the first appearance of swelling or soreness of the gums.

In cases of great weakness, where the patient is easily fatigued by little exercise, with feeble pulse, cool skin, cold extremities, or rendered so on slight occasions, carbonate of ammonia, in doses of 8 or 10 grains, may be taken three or four times a day with benefit.

Much advantage may frequently be obtained where other organs besides the stomach are implicated, giving rise to pains and anomalous symptoms in different parts of the body, by the use of tartar emetic ointment rubbed on the breast or pit of the stomach daily, until an eruption like little biles is produced, and kept up by the occasional use of the ointment until the symptoms are relieved. Or, a blister may be resorted to instead of it. Friction over the whole surface of the abdomen with a flesh brush or coarse flannel, daily, will be found of great benefit.

A Mr. Halstead, some years since, acquired great credit for the

cure of dyspepsia, and immense numbers professed to have been cured by him and his pupils. His principal treatment consisted in restricting his patients to regular diet, and kneading the stomach and bowels for half an hour every day, as a baker kneads dough.

In many cases of this disease, the lungs become sympathetically affected, giving rise to a very harassing cough. It has received the name of *Dyspeptic Consumption*. Night sweats, diarrhœa, and expectoration of pus, often attend it. No change or addition to the general treatment is called for, with the exception, perhaps, that counter-irritation to the chest by tartar-ointment or blisters is more imperiously demanded.

Bitters and tonics of every description are uncalled for, and injurious. Instead of invigorating, they are calculated to destroy the tone of the stomach, and give rise to symptoms as distressing as the disease itself. They produce apparent amendment for a time, but the patient soon falls back into a more deplorable state than before he began their use.]

VOMITING.

Vomiting may proceed from various causes; as excess in eating and drinking; foulness of the stomach; the acrimony of the aliments; a translation of the morbid matter of ulcers, of the gout, the erysipelas, or other diseases, to the stomach. It may likewise proceed from a looseness having been too suddenly stopped; from the stoppage of any customary evacuations, as the bleeding piles, the *menses*, &c. from a weakness of the stomach, the colic, the iliac passion, a rupture, a fit of the gravel, worms, or from any kind of poison taken into the stomach. It is an usual symptom of injuries done to the brain; as contusions, and compressions. It is likewise a symptom of wounds or inflammations of the diaphragm, intestines, spleen, liver, and kidneys.

Vomiting may be occasioned by unusual motions, as falling, being drawn back in a carriage, or swinging. It may likewise be excited by violent passions, or by the idea of nauseous or disagreeable objects, especially of such things as have formerly produced vomiting. Sometimes it proceeds from a regurgitation of bile into the stomach: in this case, what the patient vomits is generally of a yellow or greenish color, and has a bitter taste. Persons who are subject to nervous affections are often suddenly seized with

violent fits of vomiting. Lastly, vomiting is a common symptom of pregnancy. In this case it generally comes on about two weeks after the stoppage of the *menses*, and continues during the first three or four months.

When vomiting proceeds from a foul stomach or indigestion, it is not to be considered as a disease, but as the cure of a disease. It ought, therefore, to be promoted, by drinking lukewarm water, or thin gruel. If this does not put a stop to it, a dose of ipecacuanha may be taken, and worked off with weak camomile tea.

When a retrocession of the gout, or the obstruction of customary evacuations occasion vomiting, all means must be used to restore these discharges; or, if that cannot be effected, their place must be supplied by others, as bleeding, purging, bathing the extremities in warm water, opening issues, setons, perpetual blisters, &c.

When vomiting is the effect of pregnancy, it may generally be mitigated by bleeding, and keeping the body gently open. The bleeding, however, ought to be in small quantities at a time, and the purgatives should be of the mildest kind. Pregnant women are most apt to vomit in the morning immediately after getting out of bed, which is owing partly to the change of posture, but more to the emptiness of the stomach. It may generally be prevented, by taking a dish of coffee, tea, or some light breakfast, in bed. Pregnant women, who are afflicted with vomiting, ought to be kept easy both in body and mind. They should neither allow their stomachs to be quite empty, nor should they eat much at once. Cold water is a very proper drink in this case. If the spirits be low, and the person apt to faint, a spoonful of cinnamon-water, with a little marmalade of quinces or oranges, may be taken.

If vomiting proceeds from weakness of the stomach, bitters will be of service. Peruvian bark infused in wine or brandy, with as much rhubarb as will keep the body gently open, is an excellent medicine in this case. Sulphuric acid is also a good remedy. It may be taken in the dose of fifteen or twenty drops, twice or thrice a-day, in a glass of wine or water. Habitual vomitings are sometimes alleviated by making oysters a principal part of diet.

A vomiting which proceeds from acidities in the stomach, is relieved by alkaline purges. The best medicine of this kind is the *magnesia alba*, a teaspoonful of which may be taken in a dish of tea, or a little milk, three or four times a-day, or oftener if necessary, to keep the body open.

When vomiting proceeds from violent passions, or affections of

the mind, all evacuants must be carefully avoided, especially vomits. These are exceedingly dangerous. The patient in this case ought to be kept perfectly easy and quiet, to have the mind soothed, and to take some gentle cordial, to which a few drops of laudanum may occasionally be added.

When vomiting proceeds from spasmodic affections of the stomach, warm and aromatic plasters have a good effect. Aromatic medicines may likewise be taken inwardly, as cinnamon or mint-tea, wine with spice boiled in it, &c. The region of the stomach may be rubbed with æther, or if that cannot be had, with strong brandy, or other spirits. The belly should be fomented with warm water, or the patient immersed up to the breast in a warm bath.

I have always found the saline draughts, taken in the act of effervescence, of singular use in stopping a vomiting, from whatever cause it proceeded. These may be prepared by dissolving a drachm of the subcarbonate of potash, in an ounce and a half of fresh lemon-juice, and adding to it an ounce of peppermint-water, the same quantity of simple cinnamon-water, and a little white sugar. This draught must be swallowed before the effervescence is quite over, and may be repeated every two hours, or oftener, if the vomiting be violent. A violent vomiting has sometimes been stopped by cupping on the region of the stomach, after all other means had failed.

[Dr. Elliotson has introduced creosote to the notice of the profession as a powerful anti-emetic agent. He remarks, that he knows of no medicine at all to be compared to it in arresting vomiting, and that he had frequently known it successful when all other means had been used without success. It was given in doses of two or three drops at first, diffused in watery mucilage, and was gradually increased to ten drops or more.

As vomiting is almost always symptomatic, it is essentially necessary that the nature of the disease giving rise to it, should be ascertained, if possible, before any internal remedies are administered. In cases where the exhibition of calomel is proper for the removal of the primary disease, a large dose of that medicine alone, given in a teaspoonful of brandy, will seldom fail to check the vomiting. If the first dose is thrown up, a second should be given immediately. Firm and long-continued pressure over the pit of the stomach will often have a happy effect. Occasional doses of the infusion of columba is highly spoken of in such cases.]

As the least motion will often bring on the vomiting again, even after it has been stopped, the patient must avoid all manner of

action. The diet must be so regulated as to sit easy on the stomach, and nothing should be taken that is hard of digestion. We do not, however, mean that the patient should live entirely upon slops. Solid food, in this case, often sits easier on the stomach than liquids.

DIABETES.

THE diabetes is a frequent and excessive discharge of urine. It is seldom met with among young people: but often attacks persons in the decline of life, especially those who follow the more laborious employments, or have been hard drinkers in their youth.

Causes.—Diabetes is often the consequence of acute diseases, where the patient has suffered by excessive evacuations; it may also be occasioned by great fatigue, as riding long journeys upon a hard-trotting horse, carrying heavy burdens, and running. It may be brought on by hard drinking, or the use of strong stimulating diuretic medicines, as tincture of cantharides, spirits of turpentine, and such like. It is often the effect of drinking mineral waters.—Many imagine that these will do them no service unless they be drank in great quantities, by which mistake it often happens that they occasion worse diseases than those they were intended to cure. In a word, this disease may either proceed from too great a laxity of the organs which secrete the urine, from something that stimulates the kidneys too much, or from a thin dissolved state of the blood, which makes too great a quantity of it run off by the urinary passages.

Symptoms.—In diabetes, the urine generally exceeds in quantity all the liquid food which the patient takes. It is generally thin and pale, of a sweetish taste, and an agreeable smell. In many cases, however, it is insipid; differing but little in its sensible qualities from natural urine. It is always discharged in immense quantities; the patient frequently passing from twenty to twenty-four pints daily. The patient has continual thirst, with some degree of fever; his mouth is dry, and he spits frequently a frothy spittle.—The strength fails, the appetite decays, and the flesh wastes away till the patient is reduced to skin and bone. There is a heat of the bowels; and frequently the loins, testicles, and feet swell.

It has been remarked, that diabetes is often preceded or accompanied with an affection of the lungs; and Dr. Bardsley informs

us that he does not recollect an instance of the disease which was not attended with some affection of the chest.

This disease may generally be cured at the beginning: but after it has continued long the cure becomes very difficult. In drunkards, and very old people, a perfect cure is not to be expected.

Regimen.—Every thing that stimulates the urinary passages, or tends to relax the habit, must be avoided. For this reason, the patient should live on solid food.

[A vegetable diet is found to increase the disease in every case in which it is taken;—for this reason, the patient should be restricted to animal food, either fresh, or cured without salt. Dried beef or venison form the best articles of diet.]

The patient ought daily to take exercise, but it should be so gentle as not to fatigue him. He should lie upon a hard bed or mattress. Nothing hurts the kidneys more than lying too soft. A warm dry air, the use of the flesh-brush, and every thing that promotes perspiration, is of service. For this reason, the patient ought to wear flannel next his skin.

Treatment.—Gentle purges, if the patient be not too much weakened by the disease, have a good effect. They may consist of rhubarb or aloes, and may be taken in such quantities as to keep the body gently open.

The patient must next have recourse to astringents and corroborants. Half a drachm of powder made of equal parts of alum and the inspissated juice, commonly called *Terra Japonica*, may be taken four times a-day, or oftener, if the stomach will bear it. The alum must first be melted in a crucible; afterwards they may both be pounded together. Along with every dose of this powder, the patient may take a tea-cupful of the tincture of roses.

If the patient's stomach cannot bear the alum in substance, whey may be made of it, and taken in the dose of a tea-cupful three or four times a-day. The alum-whey is prepared by boiling two quarts of milk over a slow fire, with three drachms of alum, till the curd separates.

Opiates are of service in this disease, even though the patient rests well. They relieve spasm and irritation, and at the same time lessen the force of the circulation. Ten or twelve drops of liquid laudanum may be taken in a cup of the patient's drink three or four times a-day.

The best corroborants which we know, are the Peruvian bark and wine. A drachm of the bark may be taken in a glass of red port or claret three times a-day. The medicine will be both more

efficacious and less disagreeable, if fifteen or twenty drops of elixir vitriol be added to each dose. Such as cannot take the bark in substance, may use the decoction, mixed with an equal quantity of red wine, and sharpened as above.*

[In the variety of this disease termed *Diabetes Insididus*, in which the urine contains no saccharine matter, gentle purgatives should be administered daily, in such quantities as to produce two or three free, consistent evacuations in every twenty-four hours. Pills of aloes, rhubarb and calomel, answer this purpose best. A majority of the cases of diabetes are brought on by derangement of the digestive organs, and the method of cure must depend in each case upon the condition of the organs primarily affected, and the cause giving rise to it; the object being to restore them to a healthy condition. When the disease is idiopathic, it is, perhaps, never cured; and the most that can be done is to palliate the symptoms, by the use of the remedies already detailed. The use of lime-water and milk in conjunction with other remedies, will very frequently afford much relief. The mineral acids are highly recommended in this complaint. They may be taken as directed in the treatment of chronic inflammation of the liver.]

* Dr. Ferriar informs us that he has cured three confirmed cases of this disease by a combination of cinchona, uva ursi, and opium, taken three times a-day, in the proportion of a scruple of each of the former to half a grain of the latter; and that, from the great success he had met with from this medicine, he found it unnecessary to try Dr. Rollo's plan, which is said to have performed a cure under very unpromising circumstances.

The indications to be attended to, Dr. Rollo supposes to be, to destroy the saccharine process going on in the stomach; to promote a healthy assimilation; to prevent a supposed increased absorption by the surface; to diminish the increased action; and to change the imagined derangement of the kidneys. To answer these indications, Dr. Rollo enjoins a diet consisting wholly of animal food, rigid abstinence from every kind of vegetable substance from which sugar may be produced. He likewise enjoins hepatized ammonia, and the subcarbonate of ammonia when this cannot be obtained; the skin to be anointed with prepared lard; exercise to be avoided; antimonial wine with opium to be taken at night; an ulceration of about the size of a half crown to be kept open opposite each kidney; and the bowels to be kept open by aloes and soap.

At first Dr. Rollo was in the habit of using the sulphuret of potash; for which, however, he was induced to substitute the hepatized ammonia, under the supposition that the alkali of the former had an improper effect on the kidneys: e. g.

Take Sulphuret of potash, 10 grains.	Or, Take Sulphuret of potash, 10 grains.
Confection of roses, q. s.	Mint water, 1 1-2 ounce.
To be made into a bolus, to be taken three	Syrup of ginger, 1 drachm.
times a-day.	Make a draught to be taken three times a-day.

INCONTINENCE OF URINE.—ENURESIS.

THIS disease is most incident to laboring people in the decline of life, and to children of relaxed habits. It generally occurs in children at night, while sleeping and lying on the back. The water passes off involuntarily by drops, and does not exceed the natural quantity. Under the influence of a dream, however, it often passes voluntarily, and in a stream. It may be owing to relaxation of the sphincter of the bladder; to palsy; or injuries occasioned by blows, the operation of cutting for the stone, or preternatural labors. Sometimes it arises from calculous concretions irritating the neck of the bladder; the long continued use of strong diuretics, or of stimulating medicines injected into the bladder. It is often occasioned by pressure of the womb in pregnancy. The disease is rather troublesome than dangerous.

Treatment.—This will vary according to the cause giving rise to the disease. When it is owing to a calculus lodged in the bladder, the only method of effecting a cure is to remove it by the operation of lithotomy. When it arises as a consequence of pregnancy, it can only be permanently relieved by delivery, although it may be greatly palliated by confining the female as much as possible to a horizontal posture. In instances of urinary incontinence from general palsy, recourse must be had to the treatment mentioned under the head of "Palsy." If the paralysis, however, is merely local, affecting the sphincter of the bladder, the treatment must be conducted on the principle of strengthening the parts by the use of local stimulants and tonics.

Alum has considerable reputation as a remedy in this complaint. It should be given in doses of fifteen or twenty grains, in mucilage of gum Arabic, every four hours, until relief is obtained. The tincture of Spanish fly, or cantharides, has also been long celebrated in such cases. It should be given in doses of ten or fifteen drops, at first, three times a-day, and gradually increased until strangury ensues. The frequent use of the cold bath, or cold water poured from a height on the pubis, or dashed upon the perineum, will often have a beneficial effect. Blisters to the sacrum, electricity, and galvanism, have also been employed with success.

Spirits of turpentine, in doses of from fifteen to twenty drops three times a day, will often correct the habit of passing urine

during sleep. When it occurs in adults, and appears to depend on morbid irritability of the neck of the bladder, an opiate administered at bed time will often prevent the evacuation during the night. "Children should always be required to empty the bladder just before going to bed, and when they awaken at night they ought to be taught to rise and pass off the urine. By this, we may often prevent the occurrence of the disorder, and even occasionally obviate it after it has occurred." Mr. Charles Bell says—"Incontinence of urine never takes place *but when the boy is asleep upon his back*; and the cure is a simple one. He is to accustom himself to sleep upon his face or side: the urine is not passed, nor is he excited to dream of making urine, while he keeps this position."

In all cases of incontinence of urine, in order to prevent the discharge from excoriating the neighboring parts, females should wear a large sponge, so adjusted as to absorb the urine when it drops. The sponge should be frequently washed in warm water, to prevent its acquiring a disagreeable uriniferous smell. Males should wear a bladder, or a bottle of India rubber, so applied as to receive the urine as it passes. In many cases a bandage may be applied in such a manner as to compress the urethra, and effectually prevent the passage of urine except at the will of the individual.

SUPPRESSION OF URINE.

It has already been observed, that a suppression of urine may proceed from various causes; as an inflammation of the kidneys, or bladder; small stones or gravel lodging in the urinary passages, hard *fæces* lying in the *rectum*, pregnancy, spasm or contraction of the neck of the bladder, clotted blood in the bladder itself, a swelling of the hæmorrhoidal veins, &c.

Some of these cases require the catheter, both to remove the obstructing matter, and to draw off the urine; but as this instrument can only be managed with safety by persons skilled in surgery, we shall say nothing further of its use. A bougie may be used by any cautious hand, and will often succeed better than the catheter.

We would chiefly recommend, in all obstructions of urine, fomentations and evacuants. Bleeding, as far as the patient's

strength will permit, is necessary, especially where there are symptoms of topical inflammation. Bleeding in this case not only abates the fever, by lessening the force of the circulation, but, by relaxing the solids, it takes off the spasm or stricture upon the vessels, which occasioned the obstruction.

After bleeding, fomentations must be used. These may either consist of warm water alone, or of decoctions of mild vegetables; as mallows, camomile flowers, &c. Cloths dipped in these may either be applied to the part affected, or a large bladder filled with the decoction may be kept continually upon it. Some put the herbs themselves into a flannel bag, and apply them to the part, which is far from being a bad method. These continue longer warm than cloths dipped in the decoction, and at the same time keep the part equally moist.

[If these means fail to give relief, the patient should be immersed in a warm bath, and nauseating doses of tartar emetic or ipecac. given every few minutes until the system is completely relaxed, and the spasm or stricture yields. One of the best vehicles for administering the bath, is a large hogshead, in which the patient may either stand up or sit down. Bleeding from the arm, in a full stream, until the patient faints, will generally procure prompt and effectual relief. When suppression of urine depends on stricture of the urethra, nauseating portions of ipecac. taken every half hour, upon the slightest appearance of suppression, until the disposition passes off, is perhaps the best remedy that can be employed. In all cases, warm infusions of flaxseed, slippery-elm, water-melon seed, or parsley root, taken freely, will be found advantageous. Standing with the feet bare on a marble or iron slab, or cold floor, will often relieve slight cases of suppression.]

In all obstructions of urine the body ought to be kept open. This is not, however, to be attempted by strong purgatives, but by emollient clysters, or gentle infusions of senna and manna. Clysters in this case not only open the body, but answer the purpose of an internal fomentation, and greatly assist in removing the spasms of the bladder and parts adjacent.

The food must be light, and taken in small quantities. The drink may be weak broth, or decoctions and infusions of mucilaginous vegetables. A tea-spoonful of the sweet spirits of nitre, or a drachm of Castile soap, may be frequently put into the patient's drink; and, if there be no inflammation, he may drink small gin-punch.

Persons subject to a suppression of urine ought to live very

temperate. Their diet should be light, and their liquor diluting. They should avoid all acid and austere wines, should take sufficient exercise, lie hard, and avoid study and sedentary occupations.*

GRAVEL AND STONE.—LITHIASIS.

THESE diseases are the consequence of a peculiar disposition of the fluids, and more particularly the secretion of the kidneys to form a calculous matter, and have been supposed to be owing to the presence of an acid principle in them, called the uric acid; an opinion which seems to be confirmed by the benefit derived from a course of alkaline medicines.

When small stones are lodged in the kidneys, or discharged along with the urine, the patient is said to be afflicted with the gravel. If one of these stones happen to make a lodgment in the bladder for some time, it accumulates fresh matter, and at length becomes too large to pass off with the urine. In this case the patient is said to have the stone.

Causes.—The stone and gravel may be occasioned by high living; the use of astringent wines; a sedentary life; lying too warm, soft, or too much on the back; the constant use of water impregnated with earthy or stony particles; aliments of an astringent or windy nature, &c. It may likewise proceed from hereditary disposition. Persons in the decline of life, and those who have been much afflicted with the gout or rheumatism, are most liable to it.

Symptoms.—Small stones or gravel in the kidneys occasion fixed pain in the loins, sickness, vomiting, and sometimes bloody urine, and not unfrequently a slight suppression of urine. When the stone descends into the *ureter*, and is too large to pass along with ease, all the above symptoms are increased; the pain extends towards the bladder; the thigh and leg of the affected side are benumbed; the testicles are drawn upwards, and the urine is obstructed.

A stone in the bladder is known from the pain at the time, as

* Rubbing the abdomen and inside of the thighs with the volatile liniment, composed of equal parts of spirits of hartshorn and oil, will sometimes relieve a suppression of urine; or ten drops of the tincture of the muriate of iron, given every ten minutes, in a wine-glassful of water, will frequently produce the same effect, if the suppression be a consequence of spasm of the neck of the bladder.

well as before and after making water; from the frequent inclination to void the urine; the urine coming away by drops, or stopping suddenly when it was running in a full stream; by a violent pain in the neck of the bladder upon motion, especially on horseback, or in a carriage on a rough road; or from a white, thick, copious mucous sediment in the urine: an itching at the top of the *penis*; bloody urine; an inclination to go to stool during the discharge of urine; the patient's passing his urine more easily when lying than in an erect posture; from a kind of convulsive motion occasioned by the sharp pain in discharging the last drops of the urine; and lastly from sounding or searching with the sound, which is the only symptom to be depended upon.

When gravel has once formed in the pelvis of the kidneys, or elsewhere, it continues to increase by receiving on its surface new layers of uric acid successively precipitated, of which any one may be convinced by cutting the concretions transversely, which enables us to perceive that they are almost entirely composed of concentric layers.

Regimen.—Persons afflicted with the gravel or stone should avoid aliments of a heating nature, as salt meats, sour fruits, &c. Their diet ought chiefly to consist of such things as tend to promote the secretion of urine, and to keep the body open. Artichokes, asparagus, spinach, lettuce, parsley, succory, purslane, turnips, potatoes, carrots, and radishes, may be safely eaten. Onions, leeks, and celery are, in this case, reckoned medicinal. The most proper drinks are whey, buttermilk, milk and water, barley-water; decoctions or infusions of the roots of marsh-mallows, parsley, liquorice, or of other mild mucilaginous vegetables.

Gentle exercise is proper; but violent motion is apt to occasion bloody urine. We would, therefore, advise that it should be taken in moderation. Persons afflicted with the gravel often pass a great number of stones after riding on horseback, or in a carriage; but those who have a stone in the bladder are seldom able to bear these kinds of exercise. Where there is a hereditary tendency to this disease, a sedentary life ought never to be indulged. Were people careful, upon the first symptoms of gravel, to observe a proper regimen and to take sufficient exercise, it might often be carried off, or at least prevented from increasing, but if the same course which occasioned the disease is persisted in it must be aggravated.

Treatment.—In what is called a fit of the gravel, which is commonly occasioned by a stone lodging in the *ureter*, or some part

of the urinary passages, the patient must be bled; warm fomentations should likewise be applied to the part affected, emollient clysters administered, and diluting mucilaginous liquors drank. The treatment of this case has been fully pointed out under the articles *Inflammation of the Kidneys and Bladder*, to which we refer.

When the preference is given to a palliative mode of treatment of stone in the bladder, in males, instead of resorting to the operation of lithotomy, lithontriptics, which retard or prevent the farther accumulation of calculous matter, may be had recourse to; for example, the fixed alkali, which is not only the most powerful, but the one most generally employed, and which may be used both in the caustic and mild state.

Twenty or thirty drops of a strong solution of potash, may be taken three times a day, in a teacupful of veal broth, gradually increasing the dose from day to day. The carbonate of soda has also been used with advantage, in doses of from one scruple to half a drachm three times a day. Lime water has been occasionally employed with benefit, though it must be taken in large quantities to have much effect. From a pint to a quart, mixed with sweet milk, should be taken every day.

The aerated potash is a preparation somewhat similar in its nature to the aerated alkaline water, and is now used at St. Bartholomew's hospital, and given in the dose of two drachms dissolved in a pint of distilled water, twice a-day. It consists of half an ounce of the subcarbonate of potash, five drachms of distilled water, and one drachm of subcarbonate of ammonia. The potash being dissolved in a water bath, the ammonia is to be added; and when the effervescence is at an end, the mixture is set aside to chrystallize.

Though the caustic alkali and soap-lees, and lime water, are the most powerful medicines which have hitherto been discovered for the stone, yet there are some things of a more simple nature, which in certain cases are found to be beneficial, and therefore deserve a trial. An infusion of the seeds of *daucus sylvestris*, or wild carrot, sweetened with honey, has been found to give considerable ease in cases where the stomach could not bear any thing of an acrid nature. A decoction of raw coffee-berries taken morning and evening, to the quantity of eight or ten ounces, with ten drops of sweet spirit of nitre, has likewise been found very efficacious in bringing away large quantities of earthy matter in flakes. Honey is likewise found to be of considerable service, and may be taken in gruel, or in any other form that is more agreeable.

It is the opinion of Dr. Duncan that a solution of the subcarbonate of soda in pure water (in the proportion of a scruple to a pint) is preferable to the aerated soda water, on account of the carbonic acid gas not being disengaged on exposure to the atmosphere. On the addition of a small quantity of lemon-juice, or acid of tartar, a very agreeable effervescence is produced. The carbonate of soda, by being combined with an excess of carbonic acid gas in this preparation, is rendered not only more pleasant to the taste, but less liable to offend the stomach; and Dr. Duncan is of opinion that it is the only form in which the soda can be exhibited in sufficient doses, and for a length of time, so as to derive any benefit from its use.

[The following preparation offers, perhaps, as great a prospect of relief, as any remedy that has been employed for the purpose of ameliorating the condition of those who are afflicted with gravel or stone. The dose is, a piece the size of a nutmeg taken three times a-day.

Take	Spermaceti, one ounce.
	White soap, half an ounce.
	Curcuma, two drachms.
	Venice turpentine, two drachms.
	Oil of anise, twenty drops.
	Honey, a sufficient quantity to make the whole into a thick mass.]

Muriatic acid (particularly in what is called the phosphatic * diathesis) given in doses of twenty or thirty drops, three or four times a-day, diluted with water, has been found, in several cases where gravel was expelled from the bladder, to afford considerable benefit, and to appease the pain in micturition; and is found, moreover, to be a powerful lithontriptic.

The only other medicine which we shall mention is the *uva ursi*. It has been greatly extolled of late, both for the gravel and stone. It seems, however, to be in all respects inferior to the soap and lime-water; but it is less disagreeable, and has frequently, to my knowledge, relieved gravelly complaints. It is generally taken in powder, from half a drachm to a whole drachm, two or three times a-day. It may, however, be taken to the quantity of seven or eight drachms a-day, with great safety and good effect.

Most people troubled with the stone are guilty of one great error; they put off the operation too long. When it is certainly known that there is a stone in the bladder, and that it is too large to get along the urethra, no time ought to be lost in having it cut

* For an account of four species of calculus noticed by Dr. Wollaston and Dr. G. Pearson, see Medical and Chirurgical Review, Vol. iv. p. 486. Vol. v. p. 386.

out, before the patient's habit becomes too irritable, or the stone is so far increased in size, that it cannot be extracted without a laceration of the parts.*

INVOLUNTARY DISCHARGES OF BLOOD.— HÆMORRHAGIÆ.

SPONTANEOUS or involuntary discharges of blood often happen from various parts of the body. These, however, are so far from being always dangerous, that they often prove salutary. When such discharges are critical, which is frequently the case in fevers, they ought not to be stopped.

Periodical discharges of blood, from whatever part of the body they proceed, must not be stopped. They are always the efforts of Nature to relieve herself; and fatal diseases have often been the consequence of obstructing them. It may, indeed, be sometimes necessary to check the violence of such discharges; but even this requires the greatest caution. Instances might be given where the stopping of a small periodical flux of blood from one of the fingers has proved fatal to the health.

In the early period of life, bleeding at the nose is very common. Those who are farther advanced in years are more liable to hæmoptoe, or discharge of blood from the lungs. After the middle period of life, hæmorrhoidal fluxes are most common, and, in the decline of life, discharges of blood from the urinary passages.

Involuntary fluxes of blood may proceed from very different, and often from quite opposite causes. Sometimes they are owing to a particular construction of the body, as a sanguine temperament, laxity of the vessels, or a plethoric habit. At other times they proceed from a determination of the blood towards one particular part, as the head, the hæmorrhoidal veins, &c. They may likewise proceed from an inflammatory disposition of the blood, in which case there is generally some degree of fever: this likewise happens when the flux is occasioned by obstructed perspiration, or stricture of the skin, the bowels, or any particular part of the system.

* A tea-spoonful of pure magnesia taken two or three times a-day has of late been discovered to be a most effectual preventive of the gravel and stone, and is of service where alkalis fail to relieve the increased secretion of uric acid, and to prevent its forming calculi in the kidneys; it also agrees better with the stomach.

But a dissolved state of the blood will likewise occasion hæmorrhages. Thus, in typhoid fevers, dysentery, scurvy, malignant small-pox, &c., there are often very great discharges of blood from different parts of the body. Food of an acrid or irritating quality may likewise occasion hæmorrhages; as also strong purges and vomits, or any thing that greatly stimulates the bowels.

Violent passions or agitations of the mind will likewise have this effect. These often cause bleeding at the nose, and I have known them sometimes occasion hæmorrhage in the brain. Violent efforts of the body, by overstraining or hurting the vessels, may have the same effect, especially when the body is long kept in an unnatural posture, as hanging the head very low.

The cure of hæmorrhage must be adapted to its cause. When it proceeds from too much blood, or a tendency to inflammation, bleeding, with gentle purges and other evacuations, will be necessary. It will likewise be proper for the patient in this case to live chiefly upon a vegetable diet, to avoid all strong liquors and food that is of an acrid, hot, or stimulating quality. The body should be kept cool, and the mind easy.

When a flux of blood is the effect of acrid food, or of strong stimulating medicines, the cure is to be effected by soft and mucilaginous diet.

When obstructed perspiration, or stricture of any part of the system, is the cause of hæmorrhage, it may be removed by drinking warm diluting liquors, lying a-bed, bathing the extremities in warm water, &c.

BLEEDING AT THE NOSE.—EPISTAXIS.

BLEEDING at the nose is commonly preceded by some degree of quickness of the pulse, flushing in the face, pulsation of the temporal arteries, heaviness in the head, dimness of the sight, heat and itching of the nostrils.

To persons who abound with blood, this discharge is very salutary. It often cures vertigo, the head-ache, phrenzy, and even epilepsy. In fevers, where there is a great determination of blood towards the head, it is of the utmost service. It is likewise beneficial in inflammations of the liver and spleen, and often in the gout and rheumatism. In all diseases where bleeding is necessary, a spontaneous discharge of blood from the nose is of much more service than the same quantity let with a lancet.

In a discharge of blood from the nose, the great point is to determine whether it ought to be stopped or not. It is a common practice to stop the bleeding, without considering whether it be a disease, or the cure of a disease. This conduct proceeds from fear; but it has often bad, and sometimes fatal consequences.

When a discharge of blood from the nose happens in an inflammatory disease, there is always reason to believe that it may prove salutary; and therefore it should be suffered to go on, at least as long as the patient is not weakened by it.

When it happens to persons in perfect health, who are full of blood, it ought not to be suddenly stopped, especially if the symptoms of plethora, mentioned above, have preceded it.

In fine, whenever bleeding at the nose relieves any bad symptom, and does not proceed so far as to endanger the patient's life, it ought not to be stopped. But when it returns frequently, or continues till the pulse becomes low, the extremities begin to grow cold, the lips pale, or the patient complains of being sick or faint, it must immediately be stopped.

For this purpose the patient should be set nearly upright, with his head reclining a little, and his legs immersed in water about the warmth of new milk. His hands ought likewise to be put in lukewarm water, and his garters may be tied a little tighter than usual. Ligatures may be applied to the arms, about the place where they are usually made for bleeding, and with nearly the same degree of tightness. These must be gradually slackened as the blood begins to stop, and removed entirely as soon as it gives over.

Sometimes dry lint put up the nostrils will stop the bleeding. When this does not succeed, dossils of lint dipped in strong spirits of wine or a solution of creosote, may be put up the nostrils, or if that cannot be had they may be dipped in brandy. When it arises in elderly people, or returns too frequently, or continues till the patient becomes faint, it ought to be stopped as quick as possible: to effect this, the patient should be exposed freely to cool air, and placed nearly in the erect posture, with the head inclined somewhat backward; drinking freely of cold liquor, and some saline medicine, and living abstemiously. Besides these means, the patient may immerse his head in a pailful of cold water impregnated with the muriate of ammonia, or common salt, and snuff vinegar diluted with cold water up the nose; or some astringent wash may frequently be thrown up the nostril from which the hæmorrhage proceeds, by means of a syringe. At the same time the body, if

necessary, may be kept open, with cooling purgatives, in order to make some derivation from the blood-vessels of the head; the patient carefully avoiding all those circumstances which might either determine the blood to the head, or prevent its free return from it.

[If these means are not sufficient to arrest the hemorrhage, small doses of sugar of lead may be given internally. One or two grains, dissolved in water, should be given every half hour until the bleeding is checked. Many other internal astringents have been employed, as white vitriol, muriate of iron, gum kino, alum, and blue vitriol; but they are all inferior to the sugar of lead, which will be found promptly successful in almost all cases. When, however, sugar of lead cannot be obtained, some one of the articles enumerated should be immediately resorted to. Whenever bleeding at the nose is attended with a full, active pulse, with evident fulness of the head, local remedies are improper. In such cases, bleeding from the arm until the vascular excitement is reduced, with large doses of salt-peter dissolved in cold water, will seldom fail to give speedy relief. When this hemorrhage occurs in individuals of a weak, nervous habit of body, it should be arrested as soon as possible.]

If the genitals be immersed for some time in cold water, it will generally stop a bleeding at the nose. I have not known this fail.

Sometimes, when the bleeding is stopped outwardly, it continues inwardly. This is very troublesome, and requires particular attention, as the patient is apt to be suffocated with the blood, especially if he falls asleep, which he is very ready to do, after losing a great quantity of blood.

When the patient is in danger of suffocation from the blood getting into his throat, the passages may be stopped by drawing threads up the nostrils, and bringing them out at the mouth, then fastening pieces of sponge, or small rolls of linen cloth to their extremities; afterwards drawing them back, and tying them on the outside with a sufficient degree of tightness.

After the bleeding is stopped, the patient ought to be kept as easy and quiet as possible. He should not pick his nose, nor take away the tents or clotted blood till they fall off of their own accord, and should not lie with his head low.

Those who are affected with frequent bleeding at the nose, ought to bathe their feet often in warm water, and keep them warm and dry. They ought to wear nothing tight about their necks, to keep their body as much in an erect posture as possible, and never to view any object obliquely. If they have too much blood, a vege-

table diet, with now and then a cooling purge, is the safest way to lessen it.

When bleeding at the nose occurs in adults of a full plethoric habit, a frequent use of cooling purgatives, and an antiphlogistic regimen, may probably prevent a return of the complaint. When occasioned by too great a determination of blood to the head, bleeding will be advisable. When it is occasioned by the suppression of some accustomed evacuation, such as the menstrual or hemorrhoidal flux, these are to be promoted, if possible; and should the attempt to restore them not succeed, some other discharge must be substituted, either by means of an issue or seton.

BLEEDING AND BLIND PILES.—HÆMORRHOIS.

A DISCHARGE of blood from the hemorrhoidal vessels is called the *bleeding piles*. When the vessels only swell, and discharge no blood, but are exceedingly painful, the disease is called the *blind piles*.

Persons of a loose spongy fibre, of a bulky size, who live high, and lead a sedentary inactive life, are most subject to this disease. It is often owing to an hereditary disposition. Where this is the case, it attacks persons more early in life than when it is accidental. Men are more liable to it than women, especially those of a sanguine, plethoric, or a scorbutic habit, or of a melancholy disposition.

The piles may be occasioned by an excess of blood, by strong aloetic purges, high-seasoned food, drinking great quantities of sweet wines, the neglect of bleeding, or other customary evacuations, much riding, great costiveness, or any thing that occasions hard and difficult stools. Anger, grief, or other violent passions, will likewise occasion the piles. I have often known them brought on by sitting on the damp ground. A pair of thin breeches will excite the disorder in a person who is subject to it, and sometimes even in those who never had it before. Pregnant women are often afflicted with the piles.

In the treatment of piles due attention should be paid to the cause from which they have arisen; and as costiveness is one of the most frequent, the bowels ought to be kept open and regular by means of gentle laxative medicines; and as a habit may be

acquired, the patient will do well to observe stated times in the day for endeavoring to obtain motions, but without straining. Should none be procured by the aid of the laxative medicine, the peristaltic motion may be excited by clysters of tepid water with soap and oil.

The diet must be cool but nourishing, consisting chiefly of bread, milk, cooling vegetables, and broths. The drink may be chalybeate water, orange-whey, decoctions or infusions of the astringent and mucilaginous plants, as the tormentil root, bistort, the marsh-mallow roots, &c.

Old conserve of red roses is very good medicine in this case. It may be mixed with new milk, and taken in the quantity of an ounce three or four times a-day. This medicine is in no great repute, owing to its being seldom taken in such quantity as to produce any effects; but when taken as here directed, and duly persisted in, I have known it perform very extraordinary cures in violent hæmorrhages, especially when assisted by the tincture of roses; a tea-cupful of which may be taken about an hour after every dose of the conserve.

The bleeding piles are sometimes periodical, and return regularly once a month, or once in three weeks. In this case they are always to be considered as a salutary discharge, and by no means to be stopped. Some have entirely ruined their health by stopping a periodical discharge of blood from the hæmorrhoidal veins.

In the *blind piles*, bleeding is generally of use. The diet must be light and thin, and the drink cool and diluting. It is likewise necessary that the body be kept gently open. This may be done by small doses of the flour of brimstone and cream of tartar. These may be mixed in equal quantities, and a spoonful taken two or three times a-day, or oftener if necessary. Or an ounce of the flour of brimstone and half an ounce of purified nitre, may be mixed with three or four ounces of the lenitive electuary, and a spoonful of it taken three or four times a-day.

Emollient clysters are likewise beneficial; but there is sometimes such an astriction of the *anus*, that they cannot be thrown up. In this case I have known a vomit have a very good effect.

When the piles are exceedingly painful and swelled, but discharge nothing, the patient must sit over the steam of warm water. He may likewise apply a linen cloth dipped in warm spirits of wine to the part, or poultices made of bread and milk, or of leeks fried with butter. If these do not produce a discharge, and the piles appear large, leeches must be applied as near them as pos-

sible, or if they will fix upon the piles themselves, so much the better. When leeches will not fix, the piles may be opened with a lancet. The operation is very easy, and is attended with no danger.

Various ointments, and other external applications, are recommended in the piles; but I do not remember to have seen any effects from these worth mentioning. Their principal use is to keep the part moist, which may be done as well by a soft poultice, or an emollient cataplasm. When the pain, however, is very great, some anodyne liniment may be applied.

When the piles are very painful, the best external application is a weak solution of sugar of lead with a little laudanum, or an ointment composed of similar ingredients. An ointment made of one-third finely powdered galls, and two-thirds hog's lard, is very useful. When the piles are seated high, relief may frequently be obtained from the injection of lime-water, or of an infusion of galls.

[Among the best local remedies for piles, is an ointment made of one drachm of calomel rubbed up with an ounce of lard, and applied to the affected part two or three times a day. Much relief may also be obtained from the application of an ointment prepared by stewing the green leaves of the Jamestown weed in fresh lard, to which a small quantity of powdered opium may be added. The wilted leaves alone, will often procure some respite of the pain. The very best local application, however, that has fallen under my notice, is "Redding's Pile Ointment." It may be procured in most of the cities and towns in the West and South, with directions for its use.—In order to obtain permanent relief, the bowels must be kept in a soluble condition, by the daily use of mild cathartics. The evacuation of the bowels will always occasion some pain during the continuance of the disease, but it should be recollected, that it is the most effectual and certain means of cure, while constipation, though it may possibly save a little pain for the time being, will certainly render the disease more confirmed and intractable.]

The pain of the piles is very often removed by an emetic, or by taking twice a-day thirty drops of balsam of copaiva on a little moist sugar. When a pile has a narrow neck, it is best extirpated by the knife. If the pile be large, or has a broad basis, a double ligature may be passed through it, and tied on each side.

When piles are neglected, they are very apt to produce a *fistula*. This complaint is discovered by a stain of matter on the linen, which, on examination, will be found to proceed from a small orifice in the neighborhood of the anus.

The only certain radical cure for a fistula is a surgical operation. This should never be too long neglected. The disease gradually diffuses itself in various directions through the cellular substance surrounding the rectum; and new openings are formed, which render the complaint more difficult to be removed.

There are two ways of performing the operation. One is by passing a silk thread, or piece of flexible gold wire in at the external orifice of the fistula, and bringing it out at the anus, and then twisting the ends together, which is daily repeated till it cuts its way out. By some timid people this mode of cure is preferred to the knife: and, though kept a secret by some pretenders to medical knowledge, it is as old as the history of surgery. The knife, however, is the more certain and effectual instrument for eradicating the disease; and if suffering is to be estimated by duration, the less painful also.

SPITTING OF BLOOD.—HÆMOPTYSIS.

WE mean here to treat of that discharge of blood from the lungs only which is called an *hæmoptoe*, or *spitting of blood*. Persons of a slender make, and a lax fibre, who have long necks and strait breasts, are most liable to this disease. It is most common in the spring, and generally attacks people before they arrive at the prime or middle period of life. It is a common observation that those who have been subject to bleeding at the nose when young, are afterwards most liable to an hæmoptoe.

Causes.—Hæmoptysis may proceed from excess of blood, from a peculiar weakness of the lungs, or a bad conformation of the breast. It is often occasioned by excessive drinking, running, wrestling, singing, or speaking aloud. Such as have weak lungs ought to avoid all violent exertions of that organ, as they value life. They should likewise guard against violent passions, excessive drinking, and every thing that occasions a rapid circulation of the blood.

This disease may likewise proceed from wounds of the lungs. The obstruction of any customary evacuation may occasion a spitting of blood; as neglect of bleeding or purging at the usual seasons, the stoppage of the bleeding-piles in men, or the menses in women. It may likewise proceed from a polypus, a scirrhus concretion, or any thing that obstructs the circulation of the blood

in the lungs. It is often the effect of a long and violent cough; in which case it is generally the forerunner of consumption. A violent degree of cold suddenly applied to the external part of the body will occasion hæmoptysis. It may likewise be occasioned by breathing air which is too much rarified to be able properly to expand the lungs. This is often the case with those who work in hot places, as furnaces, glass-houses, or the like. It is likewise said to happen to such as ascend to the top of very high mountains. It arises mostly between the age of sixteen and twenty-five.

Spitting of blood is not usually attended with danger, nor is it always to be considered as a primary disease. It is often only a symptom, and in some diseases not an unfavorable one. This is the case in pleurisies, peripneumonies, and sundry other fevers. In dropsy, scurvy, or consumption, it is a bad symptom, and shows that the lungs are ulcerated.

Symptoms.—Spitting of blood is generally preceded by a sense of weight, and oppression of the breast, a dry tickling cough, hoarseness, and a difficulty of breathing. Sometimes it is ushered in with shivering, coldness of the extremities, costiveness, great lassitude, flatulence, and pain of the back and loins. As these show a general stricture of the vessels, and a tendency to inflammation, they are commonly the forerunners of a very copious discharge. The above symptoms do not attend a discharge of blood from the gums or fauces, by which means they may always be distinguished from hæmoptysis. Sometimes the blood that is spit up is thin, and of a florid red color; and at other times it is thick, and of a dark or blackish color; nothing, however, can be inferred from this circumstance, but that the blood has lain a longer or shorter time in the breast before it was discharged.

Spitting of blood, in a strong healthy person, of a sound constitution, is not very dangerous; but when it attacks the tender and delicate, or persons of a weak lax fibre, it is with difficulty removed. The danger is greater when the discharge proceeds from the rupture of a large vessel, than of a small one. When the extravasated blood is not spit up, but lodges in the breast, it corrupts, and greatly increases the danger. When the blood proceeds from an ulcer in the lungs, it is generally fatal.

Regimen.—The patient ought to be kept cool and easy. Every thing that heats the blood, or quickens the circulation, increases the danger. The mind ought likewise to be soothed, and every occasion of exciting the passions avoided. The diet should be soft, cooling and slender; as rice boiled with milk, small broths, barley-

gruels, and panado. The diet, in this case, can scarcely be too low. Even water-gruel is sufficient to support the patient for some days. All strong liquors must be avoided. The patient may drink milk and water, barley-water, whey, butter-milk, and similar articles. Every thing, however, should be drank cold, and in small quantities at a time. He should observe the strictest silence, or at least speak with a very low voice.

Treatment.—If the patient be hot or feverish, bleeding and small doses of nitre will be of use; a scruple or half a drachm of nitre may be taken in a cup of his ordinary drink twice or thrice a-day. His drink may likewise be sharpened with acids, as juice of lemon, or a few drops of sulphuric acid, sufficiently diluted with water; or he may take frequently a cup of the tincture of roses.

Bathing the feet and legs in lukewarm water has likewise a very good effect in this disease. Opiates are sometimes beneficial; but these must be administered with caution. Ten or twelve drops of laudanum may be given in a cup of barley-water twice a-day, and continued for some time, provided they be found beneficial.

The conserve of roses is likewise a very good medicine in this case, provided it be taken in sufficient quantity, and long enough persisted in. It may be taken to the quantity of three or four ounces a-day; and, if the patient be troubled with a cough, it should be made into an electuary with balsamic syrup, and a little of the syrup of poppies.

If stronger astringents be necessary, fifteen or twenty drops of sulphuric acid may be given in a glass of water, three or four times a-day. Dr. Rush has published some interesting facts concerning the utility of common salt, in curing hæmorrhage from the lungs. As this remedy may be obtained every where without difficulty, its effects ought to be made generally known. The following are the Doctor's own words :

“The mode of giving it, is to pour down from a tea to a table-spoonful of clean fine salt, as soon as possible after the hæmorrhage begins from the lungs. This quantity generally stops it; but the dose must be repeated daily for three or four days, to prevent a return of the disorder. If the bleeding continues, the salt must be continued till it is checked, but in larger doses. I have heard of several instances in which two table-spoonsful were taken at one time for several days.

“It sometimes excites a sickness at the stomach, and never fails to produce a burning sensation in the throat in its passage into the stomach, and considerable thirst afterwards.

“I have found this remedy to succeed equally well in hæmorrhages, whether they were active or passive, or whether they occurred in young or in old people.”—*Medical Inquiries*, &c. vol. i.

[When the hemorrhage is slight, occurs in persons apparently in good health, and “consists simply in the expectoration of bloody sputa, without any other symptom, it may in general be easily checked by simple means.” But if the hemorrhage increases, or has been abundant from the commencement, attended with frequent cough, a sense of heat in the chest, difficulty of breathing, with a full and hard pulse, we must not depend on a single bleeding, but repeat it the next, or even on the same day, if the hemorrhage does not cease, and the pulse retains its fulness. The bleeding must always be carried to the full extent of reducing the circulation, and relieving the lungs. After the free use of the lancet, vascular action must be kept down by the administration of nauseants; nothing answers this purpose better than grain doses of ipecac. repeated every hour. At the same time that it controls the pulse, it acts on the skin, and assists in regulating the bowels. When hæmoptysis arises from pulmonary apoplexy or congestion of the lungs, the blood is thrown up in such quantities that it seems to be vomited. In such cases, blood must be immediately drawn from the arm, regardless of quantity, for this operation is more effectual, once thoroughly performed, than several times imperfectly; and the loss of blood from venesection is always much less important than that which takes place from the lung. (Martinet.)

This disease often originates from congestion of the liver. When that is the case, in addition to the use of the lancet, active mercurial cathartics should be resorted to, and continued until that organ is restored to a healthy condition. In all instances the bowels should be kept open by the use of such purgatives as produce consistent evacuations. (See Intermittent Fever, par. —)

The patient must not lie down during the continuance of the hemorrhage, nor for some time after it has ceased. His body should be supported, by pillows or other means, as nearly in an erect position as possible, night and day, until all danger is passed.

In very violent cases, much advantage may be obtained by the application of sinapisms to the extremities. Ligatures may sometimes be used, as directed for bleeding at the nose. When the disease is intermittent, quinine may be resorted to with success.]

Those who are subject to frequent returns of this disease should

avoid all excess. Their diet should be light and cool, consisting chiefly of milk and vegetables. Above all, let them beware of vigorous efforts of the body, and violent agitation of the mind.

VOMITING OF BLOOD.—HÆMATEMESIS.

THIS is not so common as the other discharges of blood which have already been mentioned; but it is very dangerous, and requires particular attention.

Vomiting of blood is generally preceded by pain of the stomach, sickness, and nausea; and is accompanied with great anxiety, and frequent fainting fits.

This disease is sometimes periodical; in which case it is less dangerous. It often proceeds from an obstruction of the menses in women, and sometimes from the stoppage of the hæmorrhoidal flux in men. It may be occasioned by any thing that greatly stimulates or wounds the stomach, as strong vomits or purges, acrid poison, sharp or hard substances taken into the stomach, &c. It is often the effects of obstructions in the liver, the spleen, or some of the other viscera. It may likewise proceed from external violence, as blows or bruises, or from any of the causes which produce inflammation. In hysteric women, vomiting of blood is a very common, but by no means a dangerous symptom.

All the food and drink must be of a mild cooling nature, and taken in small quantities. Even drinking cold water has sometimes proved a remedy, but it will succeed better when sharpened with the weak spirits of vitriol. When there are signs of inflammation, bleeding may be necessary; but it is seldom admissible. Opiates may be of use; but they must be given in very small doses, as four or five drops of liquid laudanum twice or thrice a-day.

[As soon as possible after vomiting of blood commences, a large mustard cataplasm should be applied to both sides of the body, as well as to the ankles and wrists. Placing the feet in warm water, and dry cupping over the abdomen, will also assist materially in deriving the circulation from the seat of the disease. When it is considered hazardous to give a purgative, recourse should be had to laxative clysters. Emetics may very generally be resorted to with great benefit. Full doses of ipecacuanha should be administered in lukewarm water, in such a manner as to act promptly, without

producing nausea. When purgatives can be exhibited without increasing the affection, much advantage will be obtained from the use of calomel in moderate doses, followed in a few hours by a mixture of castor oil and turpentine. This course is peculiarly applicable to cases depending on congestion of the liver, spleen, or other abdominal organs. "The expressed juice of the common nettle (*urtica dioica*) has been much extolled for its effects in this hemorrhage, and I have known it used with apparent benefit."—(Eberle.) If faintness comes on, or the body becomes cold, the whole surface, especially the chest, must be rubbed with stimulating tinctures, as camphorated spirits, warm brandy or whiskey, Cologne water, &c. In every case, after the flow of blood has been checked, it is necessary to guard against its return by the strictest attention to regimen, and the use of acidulated drinks.—Diluted sulphuric acid or elixir vitriol will generally aid in restoring the tone of the stomach, and checking the tendency to a return of the disease.]

BLOODY URINE.—HÆMATURIA.

THIS is a discharge of blood from the vessels of the kidneys or bladder, occasioned by their being either enlarged, broken, or eroded. It is more or less dangerous according to the different circumstances which attend it.

When pure blood is voided suddenly, without interruption and without pain, it proceeds from the kidneys; but if the blood be in small quantity, of a dark color, and emitted with heat and pain about the bottom of the belly, it proceeds from the bladder. When bloody urine is occasioned by a rough stone descending from the kidneys to the bladder, which wounds the *ureter*, it is attended with a sharp pain in the back, and difficulty of making water. If the coats of the bladder are hurt by a stone, and the bloody urine follows, it is attended with the most acute pain, and a previous stoppage of urine.

Bloody urine may likewise be occasioned by falls, blows, the lifting or carrying of heavy burdens, hard riding, or any violent exercise. It may also proceed from ulcers of the bladder, from a stone lodged in the kidneys, or from violent purges, or sharp diuretic medicines, especially cantharides.

Bloody urine is always attended with some degree of danger; but it is peculiarly so when mixed with purulent matter, as this shows an ulcer somewhere in the urinary passages. Sometimes this discharge proceeds from excess of blood, in which case it is rather to be considered as a salutary evacuation than a disease. If the disease, however, be very great, it may waste the patient's strength, and occasion an ill habit of body, dropsy, or consumption.

The treatment of this disorder must be varied according to the different causes from which it proceeds.

When it is owing to a stone in the bladder, the cure depends upon an operation, a description of which would be foreign to our purpose.

If it be attended with plethora, and symptoms of inflammation, bleeding will be necessary. The body must likewise be kept open by purgative medicines; as cream of tartar, rhubarb, calomel and jalap, Cooke's or Lee's pills, or small doses of lenitive electuary.

When there is reason to suspect an ulcer in the kidneys or bladder, the patient's diet must be cool, and his drink of a demulcent, healing, balsamic quality, as decoctions of marsh-mallow roots with liquorice, solutions of gum-arabic, flaxseed tea, and infusions of slippery elm. Three ounces of marsh-mallow roots, and half an ounce of liquorice, may be boiled in two quarts of water to one; two ounces of gum-arabic, and half an ounce of purified nitre, may be dissolved in the strained liquor, and a tea-cupful of it taken four or five times a-day.

The early use of astringents in this disease is often attended with bad consequences. When the flux is stopped too soon, the grumous blood, by being confined in the vessels, may produce inflammation, abscess, and ulcers. If, however, the case be urgent, or the patient seems to suffer from the loss of blood, gentle astringents may be necessary. In this case the patient may take three or four ounces of lime-water, with half an ounce of the tincture of Peruvian bark, three times a-day.

[An attack of hemorrhage from the urinary organs, in young persons, or those of a plethoric habit, requires the prompt use of the lancet, to the extent of reducing the pulse. As the disease frequently arises from venous congestion, it is always safest to bleed from a small orifice, unless evident signs of inflammation are present. Venesection is also proper in cases depending on calculous irritation in the kidneys, or on the passage of a stone through the ureter. In the last instance, bleeding from a large orifice should be carried to the extent of producing syncope. When there is much

pain in the region of the kidneys, opium, in doses sufficiently large to give perfect relief, should be exhibited, and repeated as often as necessary. The application of mustard plasters to the small of the back will be beneficial in all cases. Cups applied immediately over the seat of the pain, may also be used with advantage. "The addition of some gallic acid to the tincture of uva ursi, will be found to answer every indication that can be expected from the employment of astringents in hæmaturia." (Thomson.) In cases unattended with pain in the bladder, or symptoms of irritation in the kidneys, great benefit has resulted from the use of muriated tincture of iron, in doses of from ten to twenty drops four or five times daily. Dr. Eberle says he succeeded in putting a permanent termination to the hemorrhage, in a case of long standing, by small doses of alum and ipecacuanha, in conjunction with a milk diet, mucilaginous drinks, and the occasional use of a mild purgative.

Take	Powdered alum, one drachm.
	———— ipecac. twenty grains.

Mix—and divide into ten equal parts—one to be taken every morning, noon, and evening.

Absolute rest should be enjoined in all cases, especially if they be recent, or are attended with local irritation. Every thing calculated to stimulate the kidneys, or invite a determination of blood to the lower part of the body must be avoided.]

DYSENTERY.—BLOODY FLUX.

[*Symptoms.*—Frequent disposition to go to stool; attempts to discharge fæces ineffectual; gripes; a grinding, bearing down pain in the lower bowel; discharges of mucus, or blood, or mixed; stools in the beginning have no fætor; fever; sometimes, slight chills followed by heat, thirst, nausea, loss of appetite, occasional pains in the bowels, and costiveness or diarrhœa, usher in the disease, followed by the above symptoms, and occasionally by an eruption on the skin.

Causes.—Use of green fruit; indigestible, unwholesome, and irritating food of all kinds; immoderate use of powerful cathartics; vicissitudes of atmospheric temperature; obstructed perspiration; and whatever will produce bilious fever.

This disease is of frequent occurrence, and in some seasons prevails as an epidemic; and if not treated promptly and energetically,

carries off large numbers of victims. It is always to be looked upon as a dangerous complaint. It often follows an attack of bilious fever, when the patient has not been sufficiently evacuated in the beginning of the disease. It occurs in the same circumstances as fevers, and always takes the grade of the prevailing fever. In most cases, it is, in fact, nothing more than "*bilious fever turned in on the bowels*"—take away the tenesmus, its distinguishing symptom, and they cannot be told apart.

Treatment.—In cases where the febrile symptoms, as chills, heat, and full pulse, are conspicuous, bleeding should be resorted to without delay; and if these symptoms are not materially abated, the bleeding should be repeated. Take a quantity of blood sufficient to make a marked impression on the pulse. If there is great irritability of the stomach, or reason to suspect the presence of crude or indigestible articles in that organ, an emetic of ipecacuanha, twenty or thirty grains, should be administered. After the stomach becomes composed, which will be in from two to six hours, give a scruple of calomel to an adult, or in proportion to a child, to be followed in six or eight hours by a dose of castor oil. If the disease does not yield to this treatment, and there is no appearance of natural fæces, portions of calomel combined with ipecac., six or eight grains of the former to one of the latter, should be given every three hours until the stools assume a decidedly bilious or more natural appearance. If there be a peculiarity of constitution forbidding the employment of much calomel, ipecac. alone should be administered in doses as large and as frequently repeated as the stomach will bear without vomiting, say one to three grains every hour until natural stools are produced. The disposition to vomit may very generally be overcome by the application of a mustard plaster, or wilted horse-radish leaves, wet with vinegar, to the pit of the stomach, and kept on as long as the patient can bear them.

After the stools assume a more natural appearance, a portion of calomel (ten to twelve grains) combined with a grain of opium or ten grains of Dover's powder, may be given every night, to be carried off next morning by oil or mild cathartic pills. Sometimes the constipation is so obstinate, that a great quantity of purgative medicine may be given without producing any apparent effect.—In such cases I have used a mixture of castor oil and turpentine with the happiest result. (Oil, one ounce, turpentine half an ounce.) Where the pain is great and the disposition to stool is frequent, injections of starch dissolved in warm water (to which a tea-spoonful of laudanum may be added), or of the mucilage of slippery elm

bark, or mutton broth, will be found of great utility. Injections may be used throughout the whole course of the disease with advantage. Warm fomentations, flannels wrung out of hot water, and applied to the abdomen, are of great benefit—as soon as one begins to cool it should be replaced by another.

The bowels must be kept open regularly every day, by the use of cathartic pills, or sufficient doses of spiced rhubarb or castor oil. If the patient becomes costive, a relapse is the almost certain consequence, and the danger is much greater than at the beginning of the disease.

In cases of children of relaxed or weakly habits, after the inflammatory symptoms have been subdued, I have often used a decoction of the blackberry or dewberry root with manifest benefit. A strong decoction of the inner bark of the sweet gum tree, sweetened with sugar, is also highly spoken of as a remedy in such cases.

The pleurisy root, called also flux root, butterfly weed, and swallow root, is a common remedy in many parts of the country. It is also recommended by Dr. Barton, of Philadelphia. A tea-cupful of a strong infusion, a handful to a quart of boiling water, may be given every two or three hours. It produces perspiration without increasing the heat of the body.

In obstinate cases of chronic dysentery, without fever, a solution of white vitriol and alum is highly recommended by Dr. Mosely. White vitriol three drachms, alum two drachms, boiling water one pint, to which may be added half an ounce of spirits of lavender, is the formula. Of this, a table-spoonful may be taken every morning, and a dose of Dover's powder in the evening. In such cases, the muriatic acid may be beneficially employed; in doses of six to ten drops in half a tumbler of gum water three times a-day.

Dr. J. K. Mitchell, of Philadelphia, has used, in obstinate cases, mucilage in drink and as a diet, with blue pill in from three to five grain doses every night, with the most astonishing success. His patients were allowed nothing but the mucilage as a diet—and the medicine was not repeated more than once in twenty-four hours. Myrtle-wax, prepared from the *myrica cerifera*, bayberry, or candleberry myrtle, has been employed in dysenteries by Dr. W. M. Fahnestock, of Pennsylvania, and many other physicians, with such success, as to induce them to view it as almost a specific.—They used the tallow made of the berries, in doses of half a drachm. The powdered root is sometimes employed: dose 10 to 15 grains.

Throughout the entire course of the disease, the diet should consist of the most digestible and unirritating articles; and great

care is requisite in returning to customary diet and habits. During the violence of the disease, animal broths, as chicken water, mutton soup, or beef tea are to be preferred, if the inflammatory symptoms do not forbid their use; in that case, use sago, gruel, panado, arrow root, or Irish moss. This last is to be preferred before the others, when it can be procured, as it is more nourishing in small quantities, and entirely free from any irritating or stimulating quality. The drinks should consist of mucilage of gum Arabic, slippery-elm or flax-seed tea, barley or rice-water, and a decoction of the pith of the sassafras.

Absolute rest is of the greatest consequence; and many cases will be cured, when it is observed, which would, otherwise, terminate fatally.

The room in which the patient is confined should be kept perfectly clean and well ventilated, and an agreeable temperature maintained. The evacuations from the bowels should be removed as soon as possible, and the floor sprinkled with vinegar, in order to dissipate disagreeable odors. Flannel should be worn next the skin, and the patient never rise to the close stool without having his feet as well as the whole body effectually protected from the influence of cool air.

In cases where the patient has become greatly emaciated, decided benefit may be obtained from a daily bath in a strong decoction of oak bark to which whiskey or brandy is added.

The bowel sometimes falls down or protrudes, and becomes extremely irritable, often so much so, that after it is returned, the syringe or clyster pipe cannot be used. When this occurs, the bowel should be replaced (see *Prolapsus Ani*), and the patient made to sit in a warm bath of milk and water, or water impregnated with poppies or mullein.]

HEAD-ACHE.—CEPHALALGIA.

ACHES and pains proceed from very different causes, and may affect any part of the body; but we shall point out those only which occur most frequently, and are attended with the greatest danger.

When the head-ache is slight, and affects a particular part of the head only, it is called *cephalalgia*; when the whole head is affected, *cephalæa*; and when one side only, *hemicrania*. A fixed pain

in the forehead, which may be covered with the end of the thumb, is called the *clavis hystericus*.

There are also other distinctions. Sometimes the pain is internal, sometimes external; sometimes it is an original disease, and at other times only symptomatic. When the head-ache proceeds from a bilious habit, the pain is very acute and throbbing, with considerable heat of the part affected. When from a cold phlegmatic habit, the patient complains of a dull heavy pain, and has a sense of coldness in the part. This kind of head-ache is sometimes attended with a degree of stupidity or folly.

Causes.—Whatever obstructs the free circulation of the blood through the vessels of the head, may occasion head-ache. In persons of a full habit, who abound with blood, the head-ache often proceeds from the suppression of customary evacuations; as bleeding at the nose, sweating of the feet, &c. It may likewise proceed from any cause that determines a great flux of blood towards the head; as coldness of the extremities, or hanging down the head for a long time. Whatever prevents the return of the blood from the head, will likewise occasion head-ache; as looking obliquely at an object, wearing any thing tight about the neck, a new hat, or the like.

When head-ache proceeds from the stoppage of a running at the nose, there is a heavy, obtuse, pressing pain in the fore-part of the head, in which there seems to be such a weight, that the patient can scarcely hold it up. When it is occasioned by the venereal disease, it generally affects the skull, and often produces a *caries* of the bones.

Sometimes head-ache proceeds from the repulsion or retrocession of the gout, erysipelas, small-pox, measles, itch, or other eruptive diseases. What is called a *hemicrania* generally proceeds from crudities or indigestion. Inanition or emptiness will also occasion head-aches. I have often seen instances of this in nurses who gave suck too long, or who did not take a sufficient quantity of solid food.

There is likewise a most violent, fixed, constant, and almost intolerable head-ache, which occasions great debility both of body and mind, prevents sleep, destroys the appetite, causes a *vertigo*, dimness of sight, a noise in the ears, convulsions, epileptic fits, and sometimes vomiting, costiveness, and coldness of the extremities.

The head-ache is often symptomatic in continual and intermitting fevers, especially quartans. It is likewise a very common symptom in hysteric and hypochondriac complaints.

When head-ache attends an acute fever, with pale urine, it is an

unfavorable symptom. In excessive head-aches, coldness of the extremities is a bad sign.

When the disease continues long, and is very violent, it often terminates in blindness, apoplexy, deafness, *vertigo*, palsy, or epilepsy.

In this disease, a cool regimen, in general, is to be observed.—The diet ought to consist of such emollient substances as will keep the body open; as apples boiled in milk, spinnage, turnips, and such like. The drink ought to be diluting, as barley-water, infusions of mild mucilaginous vegetables, decoctions of the sudorific woods, &c. The feet and legs ought to be kept warm, and frequently bathed in lukewarm water; and the head should be bathed with water and vinegar. The patient ought, as much as possible, to keep in an erect posture, and not to lie with his head too low.

When head-ache is owing to excess of blood, or a bilious constitution, bleeding is necessary. The patient may be bled in the jugular vein, and the operation repeated if there be occasion.—Cupping also, or the application of leeches to the temples, and behind the ears, will be of service; afterwards a blistering-plaster may be applied to the neck, behind the ears, or to any part of the head that is most affected. In persons of a gross habit, issues, or perpetual blisters, will be of service. The body ought likewise to be kept open by gentle laxatives.

But when the head-ache continues with a dull, heavy, continual pain, which will neither yield to bleeding nor gentle laxatives, more powerful purgatives are necessary, as pills made of calomel, aloes, and jalap. It will also be necessary in this case to keep the back-part of the neck open for a considerable time by a blister.

When head-ache is occasioned by the stoppage of a running at the nose, the patient should frequently smell to a bottle of volatile salts; he may likewise take snuff, or any thing that will irritate the nose, so as to promote a discharge from it; as the herb mastich, ground ivy, or cayenne pepper.

A *hemicrania*, especially a periodical one, is generally owing to foulness of the stomach, for which gentle vomits must be administered, followed by purgatives. After the bowels have been sufficiently cleared, chalybeate waters, and such bitters as strengthen the stomach, may be necessary. A periodical head-ache has been cured by wearing a piece of flannel over the forehead during the night.

[Periodical head-ache is frequently owing to the same causes that give rise to intermittent fevers. In such cases, quinine, or Fowler's solution of arsenic, should be given, in the manner direct-

ed when speaking of the treatment of agues, in conjunction with the auxiliary treatment there recommended.]

When the head-ache arises from a vitiated state of the humors, as in the scurvy and venereal disease, the patient, after proper evacuations, must drink freely of the decoction of woods, or the decoction of sarsaparilla, with raisins and liquorice. These, if duly persisted in, will produce very happy effects. When a collection of matter is felt under the skin, it must be discharged by an incision, otherwise it will render the bone carious.

When the head-ache is so intolerable as to endanger the patient's life, or is attended with continual watching and delirium, recourse must be had to opiates. These, after proper evacuations by bleeding and purgatives, may be applied both externally and internally. The affected part may be rubbed with laudanum, or a cloth dipped in it may be applied to the part. The patient may, at the same time, take twenty drops of the tincture of opium, in a cup of valerian or penny-royal tea, twice or thrice a-day. This is only to be done in case of extreme pain. Proper evacuations ought always to accompany and follow the use of opiates.*

When the patient cannot bear the loss of blood, his feet ought frequently to be bathed in lukewarm water, and well rubbed with a coarse cloth. Cataplasms with mustard or horse-radish ought likewise to be applied to them. This course is peculiarly necessary when the pain proceeds from gout affecting the head.

When head-ache is occasioned by great heat, hard labor, or violent exercise of any kind, it may be allayed by cooling medicines; as the saline draughts with nitre, and the like.

A little æther, dropt into the palm of the hand, and applied to the forehead, will sometimes remove a violent head-ache.

TOOTH-ACHE.—ODONTALGIA.

THIS disease is so well known, that it needs no description. It has great affinity with the rheumatism, and often succeeds pains of the shoulders and other parts of the body.

* When the pain is very violent, and does not yield to small doses of laudanum, the quantity may be increased. I have known a patient in extreme pain take three hundred drops in twenty-four hours; but such doses ought only to be administered by a person of skill.

It may proceed from obstructed perspiration, or any of the other causes of inflammation. I have often known the tooth-ache occasioned by neglecting some part of the usual covering of the head, by sitting with the head bare near an open window, or exposing it to a draught of cold air. Food or drink taken either too hot or too cold, is very hurtful to the teeth. Great quantities of sugar, or other sweet-meats, are likewise hurtful. Nothing is more destructive to the teeth than cracking nuts, or chewing any kind of hard substances. Picking the teeth with pins, needles, or any thing that may hurt the enamel with which they are covered, does great mischief, as the tooth is sure to be spoiled whenever the air gets into it. Females are very subject to the tooth-ache, during the first three or four months of pregnancy. It often proceeds from scorbutic humors affecting the gums. In this case the teeth are sometimes wasted, and fall out without any considerable degree of pain. The more immediate cause of tooth-ache, however, is a rotten or *carious* tooth.

In order to relieve the tooth-ache, we must first endeavor to lessen the flux of humors to the part affected. This may be done by mild purgatives, scarifying the gums, or applying leeches to them, and bathing the feet frequently with warm water. The perspiration ought likewise to be promoted, by drinking freely of weak wine-whey, or other diluting liquors, with small doses of nitre. Emetics too have often an exceedingly good effect in the tooth-ache.

If this fail, and the pain and inflammation still increase, bags filled with boiled camomile flowers, flowers of elder, or the like, may be applied near the part affected, with as great a degree of warmth as the patient can bear, and renewed as they grow cool: the patient may likewise receive the steams of warm water into his mouth, through an inverted funnel, or by holding his head over the mouth of a porringer filled with warm water.

Such things as promote the discharge of saliva, or cause the patient to spit, are generally of service. For this purpose, bitter, hot, or pungent vegetables may be chewed; as gentian, or calamus aromaticus. Allen recommends the root of *yellow water flower-de-luce* in this case. This root may either be rubbed upon the tooth, or a little of it chewed. Brookes says, he hardly ever knew it fail to cure the tooth-ache. It ought, however, to be used with caution.

Many other herbs, roots, and seeds, are recommended for curing the tooth-ache; as the leaves or roots of millefoil or yarrow chewed, tobacco smoked or chewed, or the seeds of mustard chewed.

Opiates often relieve the tooth-ache. For this purpose, a little

cotton wet with laudanum may be held between the teeth; or a piece of sticking-plaster, about the size of a shilling, with a bit of opium in the middle of it, may be laid on the temporal artery, where the pulsation is most sensible. *De La Motte* affirms, that there are few cases wherein this will not give relief. If there be a hollow tooth, a small pill made of equal parts of camphor and opium, or a small piece of assafœtida, put into the cavity, is often beneficial. When this cannot be had, it may be filled with gum mastich, wax, lead, cork, or any substance that will keep out the external air.

Few applications give more relief in the tooth-ache than blistering plasters. These may be applied between the shoulders; but they have the best effect when put behind the ears, and made so large as to cover a great part of the lower jaw. Burning the nerve within the affected tooth with a hot iron, has frequently given ease; but this operation ought to be performed with care.

[Oil of cloves is a very popular remedy for tooth-ache; but all the essential oils calculated to relieve the pain, do infinitely more harm than good, by injuring the enamel of the sound teeth. Their use should be sedulously avoided, in common with all patent tooth-ache drops.]

After all, when a tooth is carious, it is often impossible to remove the pain without extracting it; and as a spoiled tooth never becomes sound again, it is prudent to draw it soon, lest it should affect the rest. Tooth-drawing, like bleeding, is very much practised by persons not of the medical profession. The operation, however, is not without danger, and ought always to be performed with care. A person unacquainted with the structure of the parts, will be in danger of hurting the jaw-bone, or of drawing a sound tooth instead of a rotten one. This, however, may always be prevented by the operator striking upon the teeth with any piece of metal, as this never fails to excite pain in the carious tooth.

When the tooth-ache returns periodically, and the pain chiefly affects the gums, it may be cured by the bark.

Some pretend to have found great benefit in the tooth-ache, from the application of an artificial magnet to the affected tooth. We shall not attempt to account for its mode of operation, but if it be found to answer, though only in particular cases, it certainly deserves a trial, as it is attended with no expense, and cannot do any harm. Electricity has likewise been recommended, and particular instruments have been invented for sending a shock through the affected tooth.

Persons who have returns of the tooth-ache at certain seasons, as spring and autumn, might often prevent it by taking a purge at these times.

Keeping the teeth clean has no doubt a tendency to prevent the tooth-ache. The best method of doing this is to wash them daily with salt and water, a decoction of the bark, or with cold water alone.

EAR-ACHE.—OTALGIA.

THIS disorder chiefly affects the membrane which lines the inner cavity of the ear, called the *meatus auditorius*. It is often so violent as to occasion great restlessness, anxiety, and even delirium. Sometimes epileptic fits, and other convulsive disorders, have been brought on by extreme pain in the ear.

The ear-ache may proceed from any of the causes which produce inflammation. It often proceeds from a sudden suppression of the perspiration, or from the head being exposed to cold when covered with sweat. It may also be occasioned by worms or other insects getting into the ear, or being bred there; or from any hard body sticking in the ear. Sometimes it proceeds from the translation of morbid matter to the ear. This often happens in the decline of malignant fevers, and occasions deafness, which is generally reckoned a favorable symptom.

When the ear-ache proceeds from insects, or any hard body sticking in the ear, every method must be taken to remove them as soon as possible. The membranes may be relaxed by dropping into the ear oil of sweet almonds, or olive oil. If this should not force out the body, it must be extracted by art. I have seen insects, which had gone into the ear, come out of their own accord upon pouring in oil.

When the pain of the ear proceeds from inflammation, it must be treated like other topical inflammations, by a cooling regimen, and opening medicines. Bleeding at the beginning, either in the arm or jugular vein, or cupping in the neck, will be proper. The ear may likewise be fomented with steams of warm water; or flannel bags filled with boiled mallows and camomile-flowers may be applied to it warm; or bladders filled with warm milk and water. An exceedingly good method of fomenting the ear is to apply it

close to the mouth of a jug filled with warm water, or a strong decoction of camomile-flowers.

The patient's feet should be frequently bathed in lukewarm water, and he ought to take small doses of nitre and rhubarb, viz. a scruple of the former, and ten grains of the latter, three times a-day. His drink may be whey, or decoction of barley and liquorice, with figs or raisins. The parts behind the ear ought frequently to be rubbed with camphorated oil, or a little of the volatile liniment, and a few drops of the camphorated spirit of wine may be put into the ear with wool or cotton. A blister behind the ear, if applied early, will sometimes remove this complaint.

When the inflammation cannot be discussed, a poultice of bread and milk, or roasted onions may be applied to the ear, and frequently renewed, till the abscess breaks, or can be opened. Afterwards the humors may be diverted from the part by gentle laxatives, blisters, or issues; but the discharge must not be suddenly dried up by any external application.

Ear-ache sometimes continues for some time without any apparent inflammation, and is then frequently removed by filling the ear with cotton or wool, moistened with tincture of opium or ether, or even with warm oil or water. Pain in the ear is also sometimes the consequence of a diseased tooth, in which case the ether should be applied to the cheek over the suspected tooth, or a grain of opium with a little camphor, or half a grain of the extract of belladonna may be applied to the tooth itself.

PAIN OF THE STOMACH.—GASTRODYNIA.

THIS may proceed from various causes, as indigestion, wind, acrimony of the bile; and sharp, acrid, or poisonous substances taken into the stomach. It may likewise be occasioned by worms; the stoppage of customary evacuations; or from a translation of gouty matter to the stomach or the bowels.

Women in the decline of life are very liable to pains of the stomach and bowels, especially such as are afflicted with hysteric complaints. It is likewise very common to hypochondriac men of a sedentary and luxurious life. In such persons it often proves so extremely obstinate as to baffle all the powers of medicine.

When the pain of the stomach is most violent after eating, there

is reason to suspect that it proceeds from some fault either in the digestion or the food. In this case the patient ought to change his diet, till he finds what kind of food agrees best with his stomach, and should continue chiefly to use it. If a change of diet does not remove the complaint, the patient may take a gentle vomit, and afterwards a dose or two of rhubarb. He ought likewise to take an infusion of camomile-flowers, or some other stomachic bitter, either in wine or water. I have often known exercise remove this complaint, especially sailing, or a long journey on horseback, or in a carriage.

When pain of the stomach proceeds from flatulency, the patient is constantly belching up wind, and feels an uneasy distension of the stomach after meals. This is a most deplorable disease, and is seldom thoroughly cured. In general, the patient ought to avoid all windy diet, and every thing that sours on the stomach, as greens, roots, &c. This rule, however, admits of some exceptions. There are many instances of persons very much troubled with wind, who have received great benefit from eating parched peas, though that grain is generally supposed to be of a windy nature.*

This complaint may likewise be greatly relieved by labor, especially digging, reaping, mowing, or any kind of active employment by which the bowels are alternately compressed and dilated. The most obstinate case of this kind I ever met with, was in a person of a sedentary occupation, whom I advised, after he had tried every kind of medicine in vain, to turn gardener; which he did, and has ever since enjoyed good health.

When a pain of the stomach is occasioned by the swallowing of acrid or poisonous substances, they must be discharged by vomit. (See *Poisons*.)

When a pain of the stomach proceeds from a translation of gout, warm cordials are necessary. Some have drank a whole bottle of brandy or rum in this case in a few hours, without being in the least intoxicated, or even feeling the stomach warmed by it. It is impossible to ascertain the quantity necessary upon these occasions. This must be left to the feelings and discretion of the patient. The safer way however is, not to go too far. When there is an inclination to vomit, it may be promoted by drinking an infusion of camomile-flowers, or *carduus benedictus*.

If a pain of the stomach proceed from the stoppage of custom-

* These are prepared by steeping or soaking peas in water, and afterwards drying them in a pot or kiln till they burst. They may be used at pleasure.

any evacuations, bleeding will be necessary, especially in sanguine and very full habits. It will likewise be of use to keep the body gently open by mild purgatives; as rhubarb or senna. When this disease affects women in the decline of life, after the stoppage of the *menses*, making an issue in the leg or arm will be of peculiar service.

When the disease is occasioned by worms, they must be destroyed, or expelled, by such means as are recommended in the following section.

When the stomach is greatly relaxed, and the digestion bad, which often occasion flatulencies, the elixir of vitriol will be of singular service. Fifteen or twenty drops of it may be taken in a glass of wine or water twice or thrice a-day.

Persons afflicted with flatulency are generally unhappy unless they be taking some purgative medicines; these, though they may give immediate ease, tend to weaken and relax the stomach and bowels, and consequently increase the disorder. The best method is to mix purgatives and stomachics together. Equal parts of Peruvian bark and rhubarb may be infused in brandy or wine, and taken in such quantity as to keep the body gently open.

In heartburn, water-brash, &c. the oxide of bismuth is a remedy which has been employed in a variety of cases with considerable advantage. The proper dose is from three to ten grains, with about twenty-five grains of gum-tragacanth, repeated three times a-day. It will be safer, however, to commence with only about three grains, and increase it gradually.

Pain of the stomach proceeds from such a variety of causes, that it is difficult to prescribe a medicine for it. The treatment must of course be suited to the nature of the complaint. But I have for some years very generally recommended a plaster, which seldom fails to give relief. Its basis may be any kind of adhesive plaster spread upon leather, to which, while warm, a drachm and a half, or two drachms, of powdered opium may be added. It should be large enough to cover nearly the whole region of the stomach, and should be suffered to remain on as long as it will adhere.*

* Pain of the stomach is frequently relieved by drinking a cup or two of water as hot as it can be swallowed. This remedy is always safe, and will frequently be found effectual.

WORMS.—VERMES.

THESE are chiefly of three kinds, viz. the *tænia*, or tape-worm; the *teres*, or round and long worm; and the *ascarides*, or round and short worm. There are many other kinds of worms found in the human body; but as they proceed, in a great measure, from similar causes, have nearly the same symptoms, and require almost the same method of treatment as these already mentioned, we shall not spend time in enumerating them.

The tape-worm is white, very long, and full of joints. It is generally bred either in the stomach or small intestines. The round and long worm is likewise bred in the small bowels, and sometimes in the stomach. The round and short worms commonly lodge in the *rectum*, or lower bowel, and occasion a disagreeable itching about the seat.

The long round worms occasion squeamishness, vomiting, a disagreeable breath, gripes, looseness, swelling of the belly, swoonings, loathing of food, and at other times a voracious appetite, a dry cough, convulsions, epileptic fits, and sometimes a privation of speech. These worms have been known to perforate the intestines, and get into the cavity of the belly. The effects of the tape-worm are nearly the same with those of the long and round, but rather more violent.

Andry says, the following symptoms particularly attend the *solium*, which is a species of the tape worm, viz. swoonings, privation of speech, and a voracious appetite. The round worms called *ascarides*, besides an itching of the *anus*, cause swoonings, and tenesmus, or an inclination to go to stool.

Causes.—Worms may proceed from various causes; but they are seldom found except in weak and relaxed stomachs, where the digestion is bad. Sedentary persons are more liable to them than the active and laborious. Those who eat great quantities of unripe fruit, or who live much on raw herbs and roots, are generally subject to worms. There seems to be an hereditary disposition in some persons to this disease. I have often seen all the children of a family subject to worms of a particular kind. They seem likewise frequently to be owing to the nurse. Children of the same family nursed by one woman have often worms, when those nursed by another have none.

Symptoms.—The common symptoms of worms are, paleness of

the countenance, and, at other times, an universal flushing of the face; itching of the nose (this, however, is doubtful, as children pick their noses in all diseases); starting, and grinding of the teeth in sleep; swelling of the upper lip; the appetite sometimes bad, at other times quite voracious; looseness; a sour or stinking breath; a hard swelled belly; great thirst; the urine frothy, and sometimes of a whitish color; griping, or colic pains; an involuntary discharge of *saliva*, especially when asleep; frequent pains of the side, with a dry cough, and unequal pulse; palpitations of the heart; swoonings, drowsiness, cold sweats, palsy, epileptic fits, with many other unaccountable nervous symptoms, which were formerly attributed to witchcraft, or the influence of evil spirits. Small bodies in the excrements resembling melon or cucumber-seeds are symptoms of the tape-worm. There is no certain symptom of worms but passing them.

I lately saw some very surprising effects of worms in a girl about five years of age, who used to lie for whole hours as if dead. She at last expired, and upon opening her body, a number of the *teres*, or long ground worms, were found in her intestines, which were considerably inflamed; and what anatomists call an *intus-susceptio*, or involving one part of the gut within another, had taken place in no less than four different parts in the intestinal canal.*

Treatment.—Though numberless medicines are extolled for expelling and killing worms,† yet no disease more frequently baffles the physician's skill. In general, the most proper medicines for their expulsion are strong purgatives, and, to prevent their breeding, stomachic bitters, and now and then a glass of good wine.

The best purge for an adult is jalap and calomel. Five-and-twenty or thirty grains of the former, with six or seven of the latter, mixed in syrup, may be taken early in the morning for a dose. The dose may be repeated once or twice a-week, for a fortnight or three weeks. On the intermediate days, the patient may take a drachm of the filings of tin, twice or thrice a-day, mixed with syrup, honey, or molasses.

* That worms exist in the human body there can be no doubt, and that they must sometimes be considered as a disease, is equally certain; but this is not the case so often as people imagine. The idea that worms occasion many diseases, gives an opportunity to the professed worm-doctors of imposing on the credulity of mankind, and doing much mischief. They find worms in every case, and liberally throw in their antidotes, which generally consist of strong drastic purges. I have known these given in delicate constitutions, to the destruction of the patient, where there was not the least symptom of worms.

† A medical writer of the present age has enumerated upwards of fifty British plants, all celebrated for killing and expelling worms.

Those who do not choose to take calomel, may make use of the bitter purgatives; as aloes, tincture of senna and rhubarb, &c.

Oily medicines are sometimes found beneficial for expelling worms. An ounce of salad oil and a table-spoonful of common salt may be taken in a glass of red port wine thrice a-day, or oftener if the stomach will bear it; but the more common form of using oil is in clysters. Oily clysters, sweetened with sugar or honey, are very efficacious in bringing away the short round worms called *ascarides*, and likewise the *teres*.

[Aloetic purgatives, in conjunction with injections, are a very effectual means for expelling *ascarides*. A full dose of aloes should be given every other night; and injections composed of a watery solution of aloes, with a tea-spoonful of spirits of turpentine, and a gill of sweet milk, should be employed morning and night, until the patient is relieved. Injections of limewater and milk, in equal proportions, repeated three or four times a-day, have been used with success.]

The Harrowgate water is an excellent medicine for expelling worms, especially the *ascarides*. As this water is impregnated with sulphur, we may hence infer, that sulphur alone must be a good medicine in this case, which is found to be a fact. Many practitioners give flour of sulphur in very large doses, and with great success. It should be made into an electuary with honey or molasses, and taken in such quantity as to purge the patient.

When Harrowgate water cannot be obtained, common salt dissolved in water may be drank. I have often seen this used by country-nurses with very good effect. Some flour of sulphur may be taken over-night, and the salt water in the morning.

But worms, though expelled, will soon breed again, if the stomach remain weak and relaxed; to prevent which, infusions or decoctions of bitter herbs may be drank; as the infusion of tansy, water trefoil, camomile flowers, tops of wormwood, or the lesser centaury.

The above directions are intended for adults; but for children the medicines must be more agreeable, and in smaller doses. For a child of four or five years old, six grains of rhubarb, five of jalap, and two of calomel, may be mixed in a spoonful of syrup or honey, and given in the morning. This dose may be repeated twice a-week for three or four weeks. On the intermediate days, the child may take a scruple of powdered tin, and ten grains of æthiops mineral, in a spoonful of molasses, twice a-day. This dose must be increased or diminished, according to the age of the patient.

Bisset says, the great bastard black hellebore, or *bear's foot*, is a most powerful vermifuge for the long round worms. He orders the decoction of about a drachm of the green leaves, or about fifteen grains of the dried leaves in powder, for a dose to a child between four and seven years of age. This dose is to be repeated two or three times. He adds, that the green leaves made into a syrup with coarse sugar is almost the only medicine he has used for round worms for three years past. Before pressing out the juice, he moistens the bruised leaves with vinegar, which corrects the medicine. The dose is a tea-spoonful at bed-time, and one or two next morning.

I have frequently known those large bellies, which in children are commonly reckoned a sign of worms, quite removed by giving them white soap in their pottage, or other food. Tansy, garlic, and rue, are all good against worms, and may be used in various ways. We might here mention many other plants, both for external and internal use, but think the flings of tin with æthiops mineral, and the purges of rhubarb and calomel, are more to be depended on.

[One of the most certain remedies for the expulsion of worms, is spigelia, or Maryland pink-root. Its use, however, should be premised by other means. The best course is, to give the patient a dose of calomel, in proportion to his age, followed the next morning by a small portion of Epsom salts, for three or four days. On the fourth morning, he should commence taking a decoction of the pink-root. It is prepared by boiling an ounce of the root in a pint of water, down to half a pint. This quantity is to be drank in the course of three or four hours, by a child from five to ten years old. Half an ounce of senna may frequently be added to the root, at the time of boiling, with advantage. The decoction should always be sweetened with manna or sugar. If the bowels are not moved in a short time after the whole of the decoction is taken, an active dose of oil and turpentine should be administered. Half an ounce of castor oil to two drachms of turpentine, is a proper dose.]

The seeds of the Jerusalem oak (*chenopodium anthelminticum*), the expressed juice of the green leaves, and an essential oil prepared from the seeds, are frequently employed with success for expelling the long round worm. The bruised seeds may be given mixed with sugar melted into a cake, of which the child should be allowed to take as much as he pleases. The odor of this medicine, however, is so disagreeable to most persons, that a sufficient quantity to do much good will seldom be taken in this way. In

such cases recourse should be had to the essential oil. It is sold in the shops under the name of "worm-seed oil," accompanied with directions for use.]

Parents who would preserve their children from worms ought to allow them plenty of exercise in the open air; to take care that their food be wholesome and sufficiently solid; and, as far as possible, to prevent their eating raw herbs, roots, or green trashy fruits.*

In order to prevent any mistake of what I have here said in favor of *solid* food, it may be proper to observe, that I only made use of that word in opposition to *slops* of every kind; not to advise parents to cram their children with meat two or three times a-day. This should only be allowed at dinner, and in moderate quantities. Meat, at the principal meal, should always be accompanied with plenty of good bread, and young, tender, and well-boiled vegetables, especially in the spring, when these are poured forth from the bosom of the earth in such profusion. They promote the end in view, by keeping the body moderately open, without the aid of artificial physic. The ripe fruits of autumn produce the same effect; and, from their cooling, antiputrescent qualities, are as wholesome as the unripe are pernicious.

JAUNDICE.—ICTERUS.

THIS disease is first observable in the white of the eye, which appears yellow. Afterwards the whole skin puts on a yellow appearance. The urine is of a saffron hue, and dyes a white cloth, if put into it, of the same color. There is likewise a species of this disease called the black jaundice.

Causes.—The immediate cause of the jaundice is an obstruction of the bile, from biliary calculi in the gall-bladder and its ducts; inspissated bile; spasmodic constriction of the ducts themselves; pressing from adjacent tumors; scirrhus of the liver, &c. The

* We think it necessary here to warn people of their danger who buy cakes, powders, and other worm medicines, at random, from quacks, and give them to their children without proper care. The principal ingredient in most of these medicines is mercury, which is never to be trifled with. I lately saw a shocking instance of the danger of this conduct. A girl who had taken a dose of worm-powder, bought of a travelling quack, went out, and perhaps was so imprudent as to drink cold water during its operation: she immediately swelled, and died on the following day, with all the symptoms of having been poisoned.

remote or occasional causes are, the bites of poisonous animals; the bilious or hysteric colic; and violent passions. Strong purges or vomits will likewise occasion the jaundice. Sometimes it proceeds from obstinate agues, or from that disease being prematurely stopped by astringent medicines. In infants it is often occasioned by the *meconium* not being sufficiently purged off. Pregnant women are very subject to it. It is likewise a symptom in several kinds of fever. Catching cold, or the stopping of customary evacuations, as the *menses*, the bleeding piles, and issues, will also occasion the jaundice.

Symptoms.—The patient at first complains of excessive weariness, languor, and inactivity, and has great aversion to every kind of motion. His skin is dry, and he generally feels a kind of itching or pricking pain over the whole body. The stools are of a whitish or clay color, and the urine, as was observed above, is yellow. The breathing is difficult, and the patient complains of an unusual load or oppression of the breast. There is a heat in the nostrils, a bitter taste in the mouth, loathing of food, sickness of the stomach, vomiting, flatulency, and other symptoms of indigestion.

If the patient be young, and the disease complicated with no other malady, it is seldom dangerous; but in old people, where it continues long, returns frequently, or is complicated with the dropsy or hypochondriac symptoms, it generally proves fatal. The black jaundice is more dangerous than the yellow.

Regimen.—The diet should be cool, light, and diluting, consisting chiefly of ripe fruits and mild vegetables. Veal or chicken-broth, with light bread, are likewise very proper. Many have been cured by living almost wholly for some days on raw eggs. The drink should be butter-milk, whey sweetened with honey, or decoctions of cool opening vegetables.

The patient should take as much exercise as he can bear, either on horseback or in a carriage; walking, running, and even jumping, are likewise proper, provided he can bear them without pain, and there be no symptoms of inflammation. Patients have been often cured of this disease by a long journey, after medicines have proved ineffectual.

Amusements are likewise of great use in the jaundice. The disease is often occasioned by a sedentary life, joined to a dull, melancholy disposition. Whatever therefore tends to promote the circulation, and to cheer the spirits, must have good effect.

Treatment.—The cure of jaundice, unpromising as at times it may appear, is nevertheless to be attempted, first, by restoring the

interrupted passage of the bile through the duct; secondly, by carrying it off by the intestines; and, thirdly, by relieving the particular symptoms. Whether the passage of the bile be obstructed by biliary concretions, or by spasmodic constriction of the ductus communis choledochus, the same plan nearly must be adopted.

If the patient be young, of a full sanguine habit, and complains of pain in the right side, about the region of the liver, bleeding will be necessary. After this an emetic must be administered; and, if the disease proves obstinate, it may be repeated once or twice. No medicines are more beneficial in the jaundice than emetics, especially where it is not attended with inflammation. Half a drachm of ipecacuanha in powder will be a sufficient dose for an adult. It may be wrought off with weak camomile-tea, or, luke-warm water. The body must likewise be kept open by taking a sufficient quantity of Castile soap, or the annexed pills.

Take	Powdered rhubarb, one scruple.
	Hard soap, half a drachm.
	Calomel, one scruple.

Mix.—Divide the mass into twenty-four pills; two or three of which are to be taken at bed-time.

Fomenting the parts about the region of the stomach and liver, and rubbing them with a warm hand or flesh-brush, are likewise beneficial; but it is still more so for the patient to sit in a bath of warm water up to the breast. He ought to do this frequently, and should continue in it as long as his strength will permit.

Emetics, purges, fomentations and exercise, will seldom fail to cure the jaundice when it is a simple disease; and when complicated with the dropsy, a scirrhus liver, or other chronic complaints, it is hardly to be cured by any means.

Should jaundice have arisen as a consequence of an inflammatory affection of the liver, the usual means adopted in such cases of bringing it to a resolution must be early put in practice, viz. venesection, topical bleedings, purgatives, and the application of a blister over the part, which ought to be renewed in succession, if the disease does not abate: but where these have either failed or been neglected, and it has proceeded on to a chronic state of enlargement, or scirrhusity, thereby pressing on the biliary ducts, mercury, from time to time, must be used both internally and externally, as advised in chronic inflammation of the liver.

In cases of this nature, and in those of jaundice arising from biliary concretions, neutral salts have been much employed, together with alkalis and other deobstruents. In jaundice, soap has

indeed been looked upon as a kind of specific, and is therefore much employed, and in considerable quantities. Hemlock has often been used, and, in combination with mercury and cinchona, it might be rendered more efficacious.

Take	Extract of bark, two drachms.
	——— of hemlock, two drachms.
	Calomel, or mercurial pill, thirty grains.

Mix—and divide into pills of the common size, of which from three to twelve are to be taken daily.

Costiveness is to be removed by means of some gentle laxative, as Cooke's or Lee's pills.

I have likewise known sulphur water cure jaundice of very long standing. It should be used for some weeks, and the patient must both drink and bathe.

[In very violent attacks of the jaundice, attended with constant pain, nausea, and frequent vomiting, the sufferings of the patient should be relieved as soon as possible by the exhibition of opium, in sufficient doses to produce the desired effect. If the patient be of a strong, full habit of body, bleeding should be resorted to before the exhibition of the opium. The warm bath, frictions, and emollient applications to the pit of the stomach should never be neglected. Three or four grains of opium with fifteen or twenty of calomel should be given at once. Small doses, if they should fail to relieve, would rather do harm than good. After subduing the more violent symptoms by these means, recourse should be had to emetics and cathartics as before directed.]

Among the most valuable remedies of our indigenous *Materia Medica*, in the treatment of jaundice, may be reckoned the puccoon, or blood-root, and the bark of the wild cherry-tree. A saturated tincture of the puccoon root, may be taken in doses of from thirty to fifty drops, three times daily. A strong infusion of the bark of the wild cherry, in cold water, should be taken in doses of a wine-glassful every hour or two through the day. Hemp-seed boiled in milk, has been much extolled as a remedy in this disease. It may be taken without regard to quantity.

In cases depending on obstruction of the bile-ducts by calculi, the daily use of the nitro-muriatic acid has been found of great service. It should be taken in doses of six drops three times a-day, at the commencement, and gradually increased two drops each day, until thirty or forty drops are taken at a dose. It must be largely diluted with water, and sucked through a quill, in order to

preserve the teeth from its effects. A stimulating plaster worn over the region of the liver, has been occasionally found useful.]

Persons subject to the jaundice ought to take as much exercise as possible, and to avoid all heating and astringent aliments.

The two last directions are of far greater importance than some people may imagine. In fact, taking exercise, and keeping the body open, are the only assured and rational means of removing a complaint which generally arises from an obstruction of the biliary ducts. I knew a celebrated physician who was subject to this disease, and who, whenever it attacked him, mounted his horse, set out on a journey, and never returned till he was well. For my own part, I should place more reliance on the efficacy of such a method, than on the whole catalogue of near a hundred specifics mentioned by the late Doctor Short, though I have known instances where one of them, the decoction of hemp-seed, as already intimated, was found very beneficial.

DROPSY.—HYDROPS.

Dropsy is a preternatural swelling of the whole body, or some part of it, occasioned by a collection of water. It is distinguished by different names, according to the part affected, as *anasarca*, or a collection of water under the cellular membrane; *ascites*, or a collection of water in the belly; *hydrothorax*, or dropsy of the breast; *hydrocephalus*, or dropsy of the brain, &c.

Causes.—The dropsy is often owing to a hereditary disposition. It may likewise proceed from drinking ardent spirits, or other strong liquors. It is true almost to a proverb, that great drinkers die of dropsy. The want of exercise is also a very common cause of the disease; hence it is justly reckoned among the diseases of the sedentary. It often proceeds from excessive evacuations, as frequent and copious bleedings, strong purges often repeated, frequent salivations, &c. The sudden stoppage of customary or necessary evacuations, as the *menses*, the hæmorrhoids, or alvine fluxes, may likewise cause dropsy.

I have known dropsy occasioned by drinking large quantities of cold, weak watery liquor, when the body was heated by violent exercise. A low, damp, or marshy situation is likewise a frequent

cause of it; hence it is a common disease in moist, flat, fenny countries. It may also be brought on by a long use of poor watery diet, or of viscous aliment that is hard of digestion. It is often the effect of other diseases, as jaundice, scirrhus of the liver, a violent ague of long continuance, scarlet fever, diarrhœa, dysentery, empyema, or consumption of the lungs. In short, whatever obstructs the perspiration, or prevents the blood from being duly prepared, may occasion the disease.

Symptoms.—*Anasarca* generally begins with a swelling of the feet and ancles towards night, which for some time disappears in the morning. In the evening the parts, if pressed with the finger, will pit. The swelling gradually ascends, and occupies the trunk of the body, the arms, and the head. Afterwards the breathing becomes difficult, the urine is in small quantity, and the thirst great; the body is bound, and perspiration is greatly obstructed. To these succeed torpor, heaviness, a slow wasting fever, and a troublesome cough. This last is generally a fatal symptom, as it shows that the lungs are affected.

In the *ascites*, besides the above symptoms, there is a swelling of the belly, and often a fluctuation, which may be perceived by striking the belly on one side, and laying the palm of the hand on the opposite. This may be distinguished from *tympany* by the weight of the swelling, as well as by the fluctuation. When *anasarca* and *ascites* are combined, the case is very dangerous. Even a simple *ascites* seldom admits of a radical cure.

When the disease comes on suddenly, and the patient is young and strong, there is reason to hope for a cure, especially if medicine be given early. But if the patient be old, has led an irregular or a sedentary life, or if there be reason to suspect that the liver, lungs, or any of the viscera are unsound, there is much reason to fear the consequences.

Regimen.—The patient must abstain, as much as possible, from all drink, especially weak and watery liquors,* and must quench his thirst with whey, or acids, as juice of lemons, oranges, sorrel,

* A total abstinence from drink has long been considered as highly necessary in all drop-sical cases; but in several cases this practice has been carried too far without any benefit whatever. It seems, however, to have fallen considerably into disrepute, as large quantities of watery liquors, are now allowed, where diuretics, but more particularly the supertartrate of potash, are given. Indeed, this mode of treating dropsy is far more rational than the former, as these medicines can hardly be carried to the kidneys without being accompanied with a large portion of water. When, upon a fair trial, the quantity of urine is not found to be increased by drinking water or other aqueous fluids, their use may in that case, be discontinued.

or such like. His aliment ought to be of a diuretic quality, as toasted bread, the flesh of birds, or other wild animals, roasted; pungent and aromatic vegetables, as garlic, mustard, onions, cresses, horse-radish, shalot, &c. Some have been actually cured of a dropsy by a total abstinence from all liquids, and living entirely upon such things as are mentioned above. Beer boiled with juniper-berries is much used as a diuretic drink by the German physicians.

Exercise is of the greatest importance in dropsy. If the patient be able to walk, dig, or the like, he ought to continue these exercises as long as he can. If he be not able to walk or labor, he must ride on horseback, or in a carriage, and the more violent the motion so much the better, provided he can bear it. His bed ought to be hard, and the air of his apartments warm and dry. If he live in a damp country, he ought to be removed into a dry one, and, if possible, into a warm climate. In a word, every method should be taken to promote the perspiration, and to brace the solids. For this purpose it will likewise be proper to rub the patient's body two or three times a-day with a hard cloth, or a flesh-brush; and he ought constantly to wear flannel next his skin.

In the treatment of dropsy, the attention should be primarily directed to ascertain whether the disease be idiopathic or symptomatic; that is, whether it be an original one, or whether it prevail as a symptom of some other; as by removing the cause we shall often be enabled to remove the effect also, and thus perform a cure. For example, should dropsy have arisen as a consequence of intemperance, a free use of spirituous liquors, exposure to a moist atmosphere, or having had recourse to large evacuations, particularly bleeding; or if it have proceeded from long continued intermittent fever, or obstructions in the abdominal or thoracic viscera, the removal of these will be the first indication of cure. The next will be to evacuate the serous fluid already collected; and to restore the tone of the system, and strengthen the constitution generally.

Treatment.—If the patient be young, his constitution good, and the disease has come on suddenly, it may generally be removed by strong emetics, brisk purges, and such medicines as promote a discharge by perspiration and urine. For an adult, half a drachm of ipecacuanha in powder, and half an ounce of oxymel of squills, will be a proper vomit. This may be repeated as often as is found necessary, three or four days intervening between the doses. A cup or two of camomile-tea will be sufficient to work it off.

Between each vomit, on one of the intermediate days, the patient

may take the following purge : Jalap in powder half a drachm, cream of tartar, two drachms, calomel, six grains. These may be made into a bolus with a little syrup, and taken early in the morning. The less the patient drinks after it the better. If he be much griped, he may now and then take a cup of chicken-broth.

The patient may likewise take every night at bed-time the following bolus :—To four or five grains of camphor add one grain of opium, and as much syrup of orange-peel as is sufficient to make them into a bolus. This will generally promote a gentle sweat, which should be encouraged by drinking now and then a small cup of wine-whey, with a tea-spoonful of the spirits of hartshorn in it. A tea-cupful of the following diuretic infusion may likewise be taken every four or five hours through the day :—Take juniper-berries, mustard-seed, and horse-radish, of each half an ounce, ashes of broom, half a pound; infuse them in a quart of Rhenish wine or strong ale for a few days, and afterwards strain off the liquor. Such as cannot take this infusion, may use the decoction of seneka-root, which is both diuretic and sudorific. I have known an obstinate *anasarca* cured by an infusion of the ashes of broom in wine.

The above course will often cure an incidental dropsy, if the constitution be good; but when the disease proceeds from a bad habit or an unsound state of the viscera, strong purges and vomits are not to be ventured upon. In this case the safer course is to palliate the symptoms by the use of such medicines as promote the secretions, and to support the patient's strength by warm and nourishing cordials.

The secretion of urine may be greatly promoted by nitre. Brookes says, he knew a young woman who was cured of a dropsy by taking a drachm of nitre every morning in a draught of ale, after she had been given over as incurable. The powder of squills is likewise a good diuretic. Six or eight grains of it, with a scruple of nitre, may be given twice a-day in a glass of strong cinnamon-water. Ball says, a large spoonful of unbruised mustard-seed taken every night and morning, and drinking half a pint of the decoction of the tops of green broom after it, has performed a cure after other powerful medicines had proved ineffectual.

I have sometimes seen good effects from cream of tartar in this disease. It promotes the discharges by stool and urine, and will at least palliate, if it does not perform a cure. The patient may begin by taking an ounce every second or third day, and may increase the quantity to two or even three ounces, if the stomach

will bear it. This quantity is not, however, to be taken at once, but divided into three or four doses.

To promote perspiration, the patient may use the decoction of seneka-root, as directed above; or he may take two table-spoonsful of the solution of acetated ammonia (Mindererus's spirit) in a cup of wine-whey three or four times a-day.

As an active diuretic, the foxglove has been recommended in dropsy : but should it not answer within the first fortnight, (as it is not unfrequently the case, that where one remedy of this class fails another succeeds,) the best way will be to substitute some other for it. It may be given in infusion, saturated tincture, or combined in the form of powder with other diuretics, as squills, or cream of tartar, according to the following formulæ :—

Take Cream of tartar, two drachms.
 Powder of Foxglove, one grain.

Mix—for a powder, to be taken two or three times daily. Or,

Take Cream of tartar, two drachms.
 Powdered squills, one grain.
 ————— foxglove, half to one grain.

Make a powder, to be taken three times daily.

In *anasarca* it is usual to scarify the feet and legs. By this means the water is often discharged; but the operator must be cautious not to make the incisions too deep; they ought barely to pierce through the skin, and especial care must be taken, by spirituous fomentations and proper digestives, to prevent a gangrene.*

In *ascites*, when the disease does not evidently and speedily give way to purgative and diuretic medicines, the water ought to be let off by tapping. This is a very simple and safe operation, and will often succeed, if it were performed in due time; but if it be long delayed, it can hardly be expected that any permanent relief will be procured.†

After the evacuation of the water, the patient is to be put on a course of strengthening medicines; as the Peruvian bark; the elixir of vitriol; warm aromatics, with a due proportion of rhubarb, infused in wine, and such like. His diet ought to be dry and nourishing, such as is recommended in the beginning of the chapter; and

* If it be desirable, as it generally is, to promote the discharge of the serous fluid, whether the skin be punctured or burst spontaneously, the best means of doing so, is by the application of a common cabbage-leaf, previously a little warmed.

† The very name of an operation is dreadful to most people, and they wish to try every thing before they have recourse to it. This is the reason why tapping so seldom succeeds to our wish. I had a patient who was regularly tapped once a month for several years, and who used to eat her dinner as well after the operation as if nothing had happened. She died at last rather worn out by age than by the disease.

he should take as much exercise as he can bear without fatigue. He should wear flannel, or rather fleecy hosiery, next his skin, and make daily use of the flesh-brush.

[Blisters have been used with great success in the treatment of dropsies of the abdomen and chest. Dr. Caldwell relates several cases where the application of a large blister to the abdomen succeeded in reducing the dropsical swelling in a single night. In all cases where the pulse is active, tense, or hard and frequent, general bloodletting should be resorted to. Nothing contributes more powerfully to the absorption of the effused fluid, than this measure. It may be repeated, at intervals, as long as the pulse retains the characteristics named. I have derived more advantage in the treatment of this disease, from the use of calomel and squills, with nitre, than from any other remedies.]

Take	Powdered squills, two scruples.
	Calomel, thirty grains.

Mix—and divide the mass into forty pills.

One of these pills may be taken every two hours through the day, until bed-time; taking in the intermediate hour a teaspoonful of the sweet spirits of nitre. If the bowels are not sufficiently moved by these pills, an occasional dose of pills composed of equal parts of aloes, rhubarb, and the sulphate of iron, will keep them soluble.

Among the teas and infusions that may be taken with benefit, are those prepared from the parsley root, water melon seed, the asparagus root, the inner bark or flowers of the common elder, the pipsissiwa or winter-green, and juniper berries.

A tight flannel bandage worn around the abdomen, in ascites, is highly spoken of by all who have employed it. It not only gives support to the parts, but contributes much to the absorption of the dropsical effusion, by pressure. In debilitated persons, especially children, a double flannel jacket, with Peruvian bark quilted between, throughout its whole extent, has been beneficially used.]

I had lately a singular instance of the efficacy of nitre in a case of dropsy. A young man, a cornet of dragoons, was dropsical all over, even his face not excepted. After several things had been tried without success, I showed him my quotation from Dr. BROOKES, in this chapter. He was desirous of making an experiment with nitre, and took a drachm of it in a cup of warm ale, for some time once, and afterwards twice a-day, till he was cured.*

* I have repeatedly succeeded in carrying off the effusion of dropsy, by the use of the following pills:—Take of elaterium, six grains; of calomel, twelve grains; rub them careful-

GOUT.

THERE is no disease which shows the imperfection of medicine, or sets the advantages of temperance and exercise in a stronger light, than the gout. Excess and idleness are the true sources whence it originally sprung, and all who would avoid it must be *active and temperate*.

Though idleness and intemperance are the principal causes of the gout, yet many other things may contribute to bring on the disorder in those who are not, and to induce a paroxysm in those who are subject to it; as intense study; excess of venery; too free a use of acidulated liquors; night-watching; grief or uneasiness of mind; an obstruction or defect of any of the customary discharges.

Symptoms.—A fit of the gout is generally preceded by indigestion, drowsiness, eructation, a slight head-ache, sickness, and sometimes vomiting. The patient complains of weariness and dejection of spirits, and has often a pain in the limbs, with a sensation as if wind or cold water were passing down the thigh. The appetite is often remarkably keen a day or two before the fit, and there is a slight pain in passing urine, and frequently an involuntary shedding of tears. Sometimes these symptoms are much more violent, especially upon the approach of the fit; and it has been observed, that as is the fever which ushers in the gout, so will the fit be; if the fever be short and sharp, the fit will be so likewise; if it be feeble, long and lingering, the fit will be such also. But this observation can only hold with respect to very regular fits of the gout.

The regular gout generally makes its attack in the spring or beginning of winter, in the following manner:—About two or three in the morning, the patient is seized with a pain in his great toe, sometimes in the heel, and at other times in the ancle or calf of the leg. This pain is accompanied with a sensation as if cold water were poured upon the part, which is succeeded by a shivering, with some degree of fever. Afterwards the pain increases, and

ly together, and with a sufficient quantity of extract of gentian, form into twelve pills. Of these, one may be taken every hour, commencing early in the morning, till they *begin* to operate. I have known not only quarts but gallons of water evacuated by stool, after taking this medicine. During the operation, the patient's strength must be supported by strong beef-tea, with some wine in it. But even if successful in removing the watery accumulation by this means, a more difficult task still remains to the practitioner, that of preventing its return.

fixing among the small bones of the foot, the patient feels all the different kinds of torture, as if the part were stretched, burnt, squeezed, gnawed, or torn in pieces. The part at length becomes so exquisitely sensible, that the patient cannot bear to have it touched, or even suffer any person to walk across the room.

The patient is generally in exquisite torture for twenty-four hours, from the time of the coming on of the fit: he then becomes easier, the part begins to swell, appears red, and is covered with a little moisture. Towards morning he falls asleep, and generally falls into a gentle breathing sweat. This terminates the first paroxysm, a number of which constitutes a fit of the gout; which is longer or shorter according to the patient's age, strength, the season of the year, and the disposition of the body to this disease.

The patient is always worse towards night, and easier in the morning. The paroxysms, however, generally grow milder every day, till at length the disease is carried off by perspiration, urine, and the other evacuations. In some patients this happens in a few days; in others, it requires weeks, and in some, months to finish the fit. Those whom age and frequent fits of the gout have greatly debilitated, seldom get free from it before the approach of summer, and sometimes not till it be pretty far advanced.

Regimen.—As there are no medicines yet known that will cure the gout, we shall confine our observations chiefly to regimen, both in and out of the fit.

In the fit, if the patient be young and strong, his diet ought to be thin and cooling, and his drink of a diluting nature; but where the constitution is weak, and the patient has been accustomed to live high, this is not a proper time to retrench. In this case he must keep nearly to his usual diet, and should take frequently a cup of strong negus, or a glass of generous wine.—Wine-whey is a very proper drink in this case, as it promotes perspiration without greatly heating the patient. It will answer this purpose better if a tea-spoonful of spirits of hartshorn be put into a cup of it twice a-day. It will likewise be proper to give at bed-time a tea-spoonful of the volatile tincture of *guaiacum*, in a large draught of warm wine-whey.

As the most safe and efficacious method of discharging the gouty matter is by perspiration, this ought to be kept up by all means, especially in the affected part. For this purpose the leg and foot should be wrapt in soft flannel, fur, or wool. The last is more readily obtained, and seems to answer the purpose better than any thing else. I never knew any external application answer so well

in the gout. I have often seen it applied when the swelling and inflammation were very great, with violent pain, and have found all these symptoms relieved by it in a few days.

The patient ought likewise to be kept quiet and easy during the fit. Every thing that affects the mind disturbs the paroxysm, and tends to throw the gout upon the nobler parts. All external applications that repel the matter are to be avoided. They do not cure the disease, but remove it from a safer to a more dangerous part of the body, where it often proves fatal.

[“I have now, for several years, habitually employed purgatives in the paroxysms of gout, and with unequivocal advantage. Not content with simply opening the bowels, I completely evacuate, by active purging, the entire alimentary canal. This being accomplished, all the distressing sensations of the stomach which I have mentioned, are removed, the pain and inflammation of the limb gradually subside, and the paroxysm, thus broken, speedily passes away. To effect these purposes, however, it is often necessary to recur to the remedy repeatedly. Though, in some instances, the operation of a single cathartic will be productive of considerable relief, it more generally requires successive purging for several days to do it.”] (Chapman.)

The wine of colchicum, or meadow saffron, given in the quantity of a fluid drachm, twice a-day, in any convenient vehicle, has been found a valuable remedy, both in gout and rheumatism; but to render this medicine more certain and efficacious, the bowels should be particularly attended to; and all food of a flatulent nature should be avoided.

Many things will indeed shorten a fit of the gout, and some will drive it off altogether; but few have yet been found which will do this with safety to the patient. In pain we eagerly grasp at any thing that promises immediate ease, and even hazard life itself for a temporary relief. This is the true reason why so many infallible remedies have been proposed for the gout, and why such numbers have lost their lives by the use of them.

When the pain, however, is very great, and the patient is restless, thirty or forty drops of laudanum, more or less, according to the violence of the symptoms, may be taken at bed-time. This will ease the pain, procure rest, promote perspiration, and forward the crisis of the disease.

After the fit is over, the patient ought to take a gentle dose or two of the bitter tincture of rhubarb, or some other warm stomachic purge. He should also drink a weak infusion of stomachic

bitters in small wine or ale, as the Peruvian bark, with cinnamon, Virginian snake-root, and orange-peel. The diet at this time should be light, but nourishing, and gentle exercise ought to be taken on horseback, or in a carriage.

Out of the fit, it is in the patient's power to do many things towards preventing a return of the disorder, or rendering the fit, if it should return, less severe. This however, is not to be attempted by medicine. I have frequently known the gout kept off for several years by the Peruvian bark and other astringent medicines; but in all the cases where I had occasion to see this tried, the persons died suddenly, and to all appearance for want of a regular fit of the gout.

Though it may be dangerous to stop a fit of the gout by medicine, yet if the constitution can be so changed by diet and exercise, as to lessen, or totally prevent its return, there certainly can be no danger in following such a course. It is well known, that the whole habit may be so altered by a proper regimen, as quite to eradicate this disease; and those only who have sufficient resolution to persist in such a course have reason to expect a cure.

The course which we would recommend for preventing the gout, is as follows:—In the first place, *universal temperance*. In the next place, *sufficient exercise*.* By this we do not mean sauntering about in an indolent manner, but labor, sweat, and toil.† These only can render the humors wholesome, and keep them so. Going early to bed, and rising betimes, are also of great importance. It is likewise proper to avoid night studies, and intense thinking. The supper should be light and taken early. The use of milk, gradually increased till it becomes the principal part of diet, is particularly recommended. All strong liquors, especially generous wines and sour punch are to be avoided.

An issue or perpetual blister has a great tendency to prevent the gout. If these were more generally used in the decline of life, they would not only often prevent the gout, but also other chronic

* Some make a secret of curing the gout by *muscular exercise*. This secret, however, is as old as Celsus, who strongly recommends that mode of cure; and whoever will submit to it in the fullest extent, may expect to reap solid and permanent advantages.

† Van Sweiten mentions the case of a priest, who, enjoying a rich living, had been an old and constant sufferer from the gout. But, being made a captive by the pirates of Barbary, he was detained in slavery for two years, and compelled to work in the galleys, supported only by a meagre diet. He was at length ransomed, and the result was, that having lost his troublesome and cumbrous obesity, he had never afterwards a fit of the gout, but lived many years in the enjoyment of uninterrupted health.

maladies. Such as can afford to visit mineral springs, will find great benefit from bathing, and drinking the water. It both promotes digestion, and invigorates the habit.

Though there is little room for medicine during a regular fit of the gout, yet when it leaves the extremities, and falls on some of the internal parts, proper applications to recall and fix it become absolutely necessary. When the gout affects the head, the pain of the joint ceases, and the swelling disappears, while either severe head-ache, drowsiness, trembling, giddiness, convulsions, or delirium come on. When it seizes the lungs, great oppression, with cough and difficulty of breathing ensue. If it attacks the stomach, extreme sickness, vomiting, anxiety, pain in the epigastric region, and total loss of strength will succeed.

When the gout attacks the head or lungs, every method must be taken to fix it in the feet. They must be frequently bathed in warm water, and acrid cataplasms applied to the soles. Blistering plasters ought likewise to be applied to the ankles or calves of the legs. Bleeding in the feet or ankles is also necessary, and warm stomachic purges. The patient ought to keep in bed for the most part, if there be any signs of inflammation, and should be very careful not to catch cold.

[“When the *brain* becomes the seat of the translated disease, stimulants and opiates are inadmissible. In such cases our principal reliance must be placed on the speedy and copious abstraction of blood, together with the use of active mercurial cathartics, cold applications to the head, and sinapisms to the feet. In all instances of translated gout, stimulating or rubefacient applications to the feet are decidedly indicated.”] (Eberle.)

If it attack the stomach, with a sense of cold, warm cordials are necessary; as strong wine boiled up with cinnamon or other spices, cinnamon water, peppermint-water, and even brandy or rum.* The patient should keep his bed, and endeavor to promote a sweat by drinking warm liquors; and if he should be troubled with nausea, or inclination to vomit, he may drink camomile-tea, or any thing that will make him vomit freely. Opiates,† joined with aromatics, or with camphor, musk, or ammonia, may be of service.

When the gout attacks the kidneys, and imitates gravel-pains,

* Ether is found to be an efficacious remedy in this case.

† Take Opium, 1 grain.
 Camphor, 6 grains.
 Aromatic Confection, 5 grains.
 Make a bolus, to be taken occasionally.

the patient ought to drink freely of a decoction of marsh-mallows, and to have the parts fomented with warm water. An emollient clyster ought likewise to be given, and afterwards an opiate. If the pain be very violent, twenty or thirty drops of laudanum may be taken in a cup of the decoction.

Persons who have had the gout should be very attentive to any complaints that may happen to them about the time when they have reason to expect a return of the fit. The gout imitates many other disorders, and by being mistaken for them, and treated improperly, is often diverted from its regular course, to the great danger of the patient's life.

Those who never had the gout, but who, from their constitution or manner of living, have reason to expect it, ought likewise to be very circumspect with regard to its first approach. If the disease, by wrong conduct or improper medicines, be diverted from its proper course, the miserable patient has a chance to be ever after tormented with head-aches, coughs, pains of the stomach and intestines; and to fall at last a victim to its attack upon some of the more noble parts.

RHEUMATISM.

THIS disease has often a resemblance to the gout. It generally attacks the joints with exquisite pain, and is sometimes attended with inflammation and swelling. It is most common in the spring, and towards the end of autumn. It is usually distinguished into acute and chronic: or the rheumatism with and without a fever.

Causes.—The causes of rheumatism are frequently the same as those of an inflammatory fever, viz. obstructed perspiration; the immoderate use of strong liquors; sudden changes of the weather; and sudden transitions from heat to cold. The most extraordinary case of a rheumatism that I ever saw, where almost every joint of the body was distorted, was a man who used to work one part of the day by the fire, and the other part of it in the water. Very obstinate rheumatisms have likewise been brought on by persons not accustomed to it, allowing their feet to continue long wet. The same effects are often produced by wet clothes, damp beds, sitting or lying on the damp ground, travelling in the night, &c.

The rheumatism may likewise be occasioned by excessive evacuations, or the stoppage of customary discharges. It is often the

effect of chronic diseases, which vitiate the humors; as the scurvy, the *lues venerea*, and obstinate autumnal agues.

Symptoms.—The *acute* rheumatism commonly begins with weariness, shivering, a quick pulse, restlessness, thirst, and other symptoms of fever. Afterwards the patient complains of flying pains, which are increased by the least motion. These at length fix in the joints, which are often affected with swelling and inflammation. If blood be let in this disease, it has generally the same appearance as in pleurisy.

Treatment.—In this kind of rheumatism, the treatment of the patient is nearly the same as in an acute or inflammatory fever. If he be young and strong, bleeding is necessary, which may be repeated according to the exigencies of the case. The body ought likewise to be kept open by emollient clysters, or cool opening liquors; as decoctions of tamarinds, cream of tartar, rhubarb, whey, senna-tea, and the like. The diet should be light, and in small quantity, consisting chiefly of roasted apples, gruel, or weak chicken broth. After the feverish symptoms have abated, if the pain still continues, the patient must keep his bed, and take such things as promote perspiration; as wine-whey, with solution of the acetated ammonia, &c.* He may likewise take, for a few nights, at bedtime, in a cup of wine-whey, a drachm of the cream of tartar, and half a drachm of gum guaiacum in powder.

[The hourly exhibition of a grain or two of ipecacuanha, combined with ten or twelve grains of nitre, warm diluting drinks being given in the interim, constitutes an excellent sudorific process. To this, to prevent sickness and purging, we have sometimes advantageously added, from the sixth to the tenth of a grain of opium. Heating sudorifics should be carefully avoided.] (Caldwell.)

Warm bathing, after proper evacuations, has often an exceedingly good effect. The patient may either be put into a bath of warm water, or have cloths wrung out of it applied to the parts affected. Great care must be taken that he do not catch cold after bathing.

The *chronic* rheumatism is seldom attended with any considerable degree of fever, and is generally confined to some particular part of the body, as the shoulders, the back, or the loins. There is seldom any inflammation or swelling in this case. Persons in

* Take Camphor Mixture, 1 ounce.
 Solution of Tartarized Antimony, 20 drops.
 ——— of Acetated Ammonia, 3 drachms.

Mix them for a draught, to be repeated every four or six hours.

the decline of life are most subject to the chronic rheumatism. In such patients it often proves extremely obstinate and sometimes incurable.

In this kind of rheumatism the regimen should be nearly the same as in the acute. Arbuthnot says, "If there be a specific in aliment for the rheumatism, it is certainly whey;" and adds, "that he knew a person subject to this disease, who could never be cured by any other method than a diet of whey and bread." He likewise says, that cream of tartar in water gruel, taken for several days, will ease rheumatic pains considerably." This I have often experienced; but found it always more efficacious when joined with gum guaiacum, as already directed. In this case the patient may take the dose formerly mentioned twice a-day, and likewise a tea-spoonful of the volatile tincture of gum guaiacum at bed-time in wine-whey.

This course may be continued for a week, or longer, if the case proves obstinate, and the patient's strength will permit. It ought then to be omitted for a few days, and repeated again. At the same time leeches or a blistering plaster may be applied to the part affected. I have likewise known a plaster of Burgundy pitch worn for some time on the part affected give great relief in rheumatic pains. My ingenious friend, Dr. Alexander, of Edinburgh, says, he has frequently cured very obstinate rheumatic pains by * rubbing the part affected with tincture of cantharides. When the common tincture did not succeed, he used it of a double or treble strength. Cupping upon the part affected is likewise often very beneficial, and so is the application of leeches.

Blisters are sometimes employed in this complaint; but they appear to be most serviceable in those cases where the disease partakes of the nature of acute rheumatism, or where the pain is fixed in any particular joint; and a repetition of fresh blisters will be preferable to keeping up a constant sore by stimulating the part with savin or other ointments; and produce a greater effect upon the disease.

Though this disease may not seem to yield to medicines for some time, yet they ought still to be persisted in. Persons who are subject to frequent returns of the rheumatism will often find their

* Take	Olive Oil,	-	-	2 ounces.
	Camphor,	-	-	2 drachms.
	Dissolve, and add—			
	Tincture of Cantharides,	1	drachm.	
	Solution of Ammonia,	$\frac{1}{2}$	ounce.	
Make a liniment.				

account in using medicines, whether they be immediately affected with the disease or not. The chronic rheumatism is similar to the gout in this respect, that the most proper time for using medicines to extirpate it is when the patient is most free from the disorder.

There are several of our own domestic plants which may be used with advantage in the rheumatism. One of the best is the white *mustard*. A table-spoonful of the seed of this plant may be taken twice or thrice a-day, in a glass of water or small wine. The water trefoil is likewise of great use in this complaint. It may be infused in wine or ale, or drank in form of tea. The ground-ivy, camomile, and several other bitters, are likewise beneficial, and may be used in the same manner. No benefit, however, is to be expected from these, unless they be taken for a considerable time. Want of perseverance in the use of medicines is one reason why chronic diseases are so seldom cured.

[Bandaging the affected limb or part equably, but somewhat tightly, with flannel rollers, proves exceedingly useful in the treatment of this disease. It gives support to the muscles of the part, aids circulation in them, prevents in them the sensation of fatigue, and thus restores to them their lost tone. It produces, in fact, a new impression, whence proceeds a new action, which effectually severs the morbid association, wherein the disease consists. It also aids in promoting perspiration. (Caldwell.)

Dr. Chapman extols the savin (*juniperus sabina*) as a remedy in chronic rheumatism. "He says:—"The result of my numerous trials with it is such, that I hope it will not be deemed the language of enthusiasm, when I declare, that I hold it to be entitled, to be placed at the very head of the remedies in the chronic rheumatism." His practice is, to administer to an adult from twelve to fifteen grains of the powdered leaves, three times a-day. This dose he gradually increases, until an evident effect is produced; which sometimes, as he informs us, requires three or four times the quantity with which he had begun.

An indigenous remedy, of considerable reputation is, the juice of the poke-berry (*phytolacca decandria*). Of this, a small wine-glassful may be taken two or three times a-day. To prevent the juice from fermenting and becoming sour, it should be mixed, when expressed, with a little spirits of wine, or common brandy. The sarsaparilla is deemed valuable, as a sudorific, in this disease. A drachm of the extract, or a decoction of half an ounce of the root, may be taken at a dose, and repeated as often as circumstances may require. Fowler's solution of arsenic possesses strong

anti-rheumatic qualities. From six to ten drops may be taken three or four times a-day.—(Caldwell.) The blood-root is also highly esteemed as an auxiliary remedy in this disease. It may be given as directed in the treatment of jaundice. Dr. Cooke says he has seen the most surprising success attend the administration of balsam copaiba, in chronic rheumatism. He used equal parts of copaiba and alcohol, shook together until they were intimately mixed; and gave a tea-spoonful of the mixture, poured on sugar, at a dose. He also recommends one grain doses of ipecac. as a purgative, in the acute form of the disease. It should be repeated every hour if the stomach will bear it.]

The internal remedies most generally recommended in chronic rheumatism are sudorifics, and medicines of a stimulating nature, which abound in essential oils and resins; and therefore volatile alkaline salts, guaiacum, turpentine combined with Cinchona bark, and the like, may be given in any of the usual forms.

Take Guaiacum, in powder, six grains.
 Antimonial Powder, three grains.
 Syrup of Ginger, enough to form a bolus, to be taken three times a-day.

Or,

Take Ammoniated Tincture of Guaiacum, two drachms.
 Spirit of Cinnamon, half an ounce.
 Decoction of Bark, one ounce.
 Solution of Tartarized Antimony, twenty-four drops.

Make a draught, to be taken two or three times a-day.

Cold bathing especially in salt water, often cures the rheumatism. We would also recommend exercise, and wearing flannel next the skin. Issues are likewise very proper, especially in chronic cases. If the pain affects the shoulders, an issue may be made in the arm; but if it affects the loins it should be put into the leg or thigh.

Persons afflicted with the scurvy are very subject to rheumatic complaints. The best medicines in this case are bitters and mild purgatives. These may either be taken separately or together, as the patient inclines. An ounce of Peruvian bark, and half an ounce of rhubarb, in powder, may be infused in a bottle of wine, and one, two, or three wine glasses of it taken daily, as shall be found necessary for keeping the body gently open. In cases where the bark itself proves sufficiently purgative, the rhubarb may be omitted.

Such as are subject to frequent attacks of the rheumatism ought to make choice of a dry, warm situation, to avoid the night-air, wet clothes, and wet feet, as much as possible. Their clothing

should be warm, and they should wear flannel next their skin, and make frequent use of the flesh-brush.

One of the best articles of dress, not only for the prevention of rheumatism, but for powerful co-operation in its cure, is fleecy hosiery. A medical friend of mine, of long experience and much practice in the isle of Ely, assured me, that the introduction of that manufacture had prevented more rheumatisms, colds, and agues, than all the medicines which had ever been used there. I have even myself experienced the good effects of such warm covering in the rheumatism, to which I was very subject about thirty years ago; but have never experienced any attack of it since I took to warm clothing.

When there are any suspicions of the disease being connected with a syphilitic taint, a long continued course of mercurial alteratives (see *Syphilis*) must be entered upon.

Chronic rheumatism sometimes affects the lumbar region, with an acute pain shooting down into the os sacrum, so that the patient cannot stand upright without suffering considerable pain and inconvenience; nor does he feel any ease when in bed. This affection is known by the name of lumbago, and, as it frequently does, when it fixes itself in the hip-joint, it is called sciatica. Both of these affections are to be treated in the same manner as chronic rheumatism. In sciatica and local pains of the hip and loins, turpentine is often given with relief, as is also guaiacum combined with the essential oil of sassafras.

SCURVY.—SCORBUTUS.

THIS disease prevails chiefly in cold northern countries, especially in low damp situations, near large marshes, or great quantities of stagnating water. Sedentary people, of a dull melancholy disposition are most subject to it. It often proves fatal to sailors on long voyages, particularly in ships that are not properly ventilated, have many people on board, or where cleanliness is neglected.

It is not necessary to mention the different species into which this disease has been divided, as they differ from one another chiefly in degree. What is called the *land scurvy*, however, is seldom attended with those highly putrid symptoms which appear in

patients who have been long at sea, and which, we presume, are rather owing to confined air, want of exercise, and the unwholesome food eaten by sailors on long voyages, than to any specific difference in the disease.

Causes.—The scurvy is occasioned by cold moist air; by the long use of salted or smoke-dried provisions, or any kind of food, that is hard of digestion, and affords little nourishment. It may also proceed from the suppression of customary evacuations. It is sometimes owing to an hereditary taint, in which case a very small cause will excite the latent disorder. Grief, fear, and other depressing passions, have a great tendency both to excite and aggravate this disease. The same observation holds with regard to neglect of cleanliness, bad clothing, the want of proper exercise, confined air, unwholesome food, or any disease which greatly weakens the body.

Symptoms.—This disease may be known by unusual weariness, heaviness, and difficulty of breathing, especially after motion; rottenness of the gums, which are apt to bleed on the slightest touch; a foul breath; frequent bleeding at the nose; crackling of the joints; difficulty of walking; sometimes a swelling, and sometimes a falling away of the legs, on which there are livid, yellow, or violet-colored spots; the face is generally of a pale or leaden color. As the disease advances, other symptoms come on; as rottenness of the teeth, hæmorrhages, or discharges of blood from different parts of the body, foul obstinate ulcers, pains in various parts, especially about the breast, and dry scaly eruptions all over the body. At last a wasting or hectic fever comes on, and the miserable patient is often carried off by a dysentery, a diarrhœa, a dropsy, the palsy, fainting fits, or a mortification of some of the bowels.

Cure.—We know no way of curing this disease but by pursuing a plan directly opposite to that which brings it on. It proceeds from errors in diet, air, or exercise; and cannot be removed but by a proper attention to these important articles.

If the patient has been obliged to breathe a cold, damp, or confined air, he should be removed, as soon as possible, to a dry, open, and moderately warm one. If there is reason to believe that the disease proceeds from a sedentary life, or depressing passions, as grief, fear, &c. the patient must take daily as much exercise in the open air as he can bear, and his mind should be diverted by cheerful company and other amusements. Nothing has a greater tendency either to prevent or remove this disease than constant cheerfulness and good humor.

When the scurvy has been brought on by a long use of salted provisions, the proper medicine is a diet consisting chiefly of fresh vegetables; as oranges, apples, lemons, limes, tamarinds, water-resses, scurvy-grass, &c. The use of these, with milk, pot-herbs, new bread, and fresh beer or cider, will seldom fail to remove the scurvy of this kind, if taken before it is too far advanced; but to have this effect, they must be persisted in for a considerable time. When fresh vegetables cannot be obtained, pickled or preserved ones may be used; and where these are wanting, recourse must be had to the chemical acids. All the patient's food and drink should, in this case, be sharpened with cream of tartar, elixir of vitriol, vinegar, or the muriatic acid.

These things, however, will more certainly prevent than cure the scurvy, for which reason sea-faring people, especially in long voyages, ought to lay in plenty of them. Cabbages, onions, gooseberries, and many other vegetables, may be kept a long time by *pickling*, *preserving*, &c., and when these fail, the chemical acids recommended above, which will keep for any length of time, may be used.

In the course of the disease particular symptoms may arise requiring a separate consideration. Pains of the belly are to be relieved by emollients and opiates; oppression at the chest and impeded respiration by blisters; for bleeding is never to be used in this disease; contractions of the hams and calves of the legs by fomenting the part with warm water and vinegar, and by the application of emollient poultices and frictions; sponginess of the gums, and looseness of the teeth, by washing the mouth frequently with antiseptic and astringent gargles;* and foul ulcers are to be cleansed and healed by washing them with lemon-juice, or a tincture consisting of equal parts of the tincture of myrrh, and then dressing them with some kind of ointment, or a sorrel poultice. In bad cases of ulceration the charcoal or effervescent poultice may probably be serviceable.

I have often seen very extraordinary effects in the land-scurvy from a milk diet.

The most proper drink in the scurvy is whey or buttermilk. When these cannot be had, sound cider, perry, or spruce-beer, may be used. Wort has likewise been found to be a proper drink

* Take Infusion of Roses, 4 ounces, Or, Take Decoction of Bark, 6 ounces.
 Alum, in Powder, 1½ ounce, Tincture of Myrrh, 1½ ounce.
 Honey, 1 drachm. Muriatic Acid, 12 to 20 drops.
 Mix them for a gargle. Make a gargle.

in the scurvy, and may be used at sea, as malt will keep during the longest voyage. A decoction of the tops of the spruce-fir is likewise proper. It be may drank in the quantity of a pint twice a day. Tar-water may be used for the same purpose, or decoctions of any of the mild mucilaginous vegetables; as sarsaparilla, marsh-mallow roots, &c. Infusions of the bitter plants, as ground ivy, the lesser centaury, and marsh trefoil, are likewise beneficial, I have seen the peasants in some parts of Britain express the juice of the last mentioned plant, and drink it with good effect in those foul scorbutic eruptions with which they are often troubled in the spring season.

Sulphur water is certainly an excellent medicine in the land-scurvy. I have often seen patients who had been reduced to the most deplorable condition by this disease, greatly relieved by drinking sulphur water, and bathing in it. The chalybeate water may also be used with advantage, especially with a view to brace the stomach after drinking the sulphur-water, which, though it sharpens the appetite, never fails to weaken the powers of digestion.

A slight degree of scurvy may be carried off by frequently sucking a little of the juice of a bitter orange or a lemon. When the disease affects the gums only, this practice, if continued for some time, will generally carry it off. We would, however, recommend the bitter orange as greatly preferable to lemon, it seems to be as good a medicine, and is not near so hurtful to the stomach. Perhaps our own sorrel may be little inferior to both of them.

All kinds of salad are good in the scurvy, and ought to be eaten very plentifully, as spinage, lettuce, parsley, celery, endive, radish, dandelion, &c. It is amazing to see how soon fresh vegetables in the spring cure the brute animals of any scab or foulness which is upon their skins. It is reasonable to suppose that their effects would be as great upon the human species, were they used in proper quantity for a sufficient length of time.

I have sometimes seen good effects in scorbutic complaints of very long standing, from the use of a decoction of the roots of water-dock. It is usually made by boiling a pound of the fresh root in six pints of water, till about one-third of it be consumed. The dose is from half a pint to a whole pint of the decoction every day. But in all the cases where I have seen it prove beneficial, it was made much stronger, and drank in larger quantities. The safest way, however, is for the patient to begin with small doses, and increase them both in strength and quantity, as

he finds his stomach will bear it. It must be used for a considerable time. I have known some take it for many months, and have been told of others who had used it for several years, before they were sensible of any benefit, but who nevertheless were cured by it at length.

LEPROSY.

I have met with very few cases of real leprosy in the course of my practice. The dry, scaly eruptions all over the body which are often the effects of the scurvy, are very liable to be considered as leprosy symptoms, and certainly resemble them very much. But no evil can arise even from mistake in this particular, as the same alterative plan, which is advisable in the scurvy, will be generally found efficacious in the leprosy. Perhaps in the latter complaint, we ought to lay a greater stress, if possible, on the benefit of good air, and of frequent changes of the linen worn next the skin. What has been peculiarly called the disease of uncleanness, can only be remedied by the practice of the opposite virtue. I have often found, that, after proper means for correcting internal impurities had been used for some time, the complete disappearance of the leper's sores was often safely and effectually promoted by the *ointment for diseases of the skin* mentioned in the Appendix.*

SCROFULA.—KING'S EVIL.

THIS disease chiefly affects the glands, especially those of the neck. Children and young persons of a sedentary life, are very subject to it. It is one of those diseases which may be removed by proper regimen, but seldom yields to medicine. The inhabitants of cold, damp, marshy countries are most liable to the scrofula.

* I have lately seen some instances of inveterate eruptions on the face, commonly termed scorbutic, removed by the use of the *dulcamara*. Take of the stalks of that plant, half an ounce, liquorice root, two drachms; macerate in two quarts of warm water for two hours, and then boil for ten minutes. Of the strained decoction a tea-cupful with a little milk, may be taken three times a-day. It must be persisted in for some time.

Causes.—This disease may proceed from an hereditary taint. Children who have the misfortune to be born of sickly parents, whose constitutions have been greatly injured by the venereal or other chronic diseases, are apt to be affected by the scrofula. It may likewise proceed from such diseases as weaken the habit or vitiate the humors, as the small-pox, measles, and scarlatina. External injuries, as blows, bruises, and the like, sometimes produce scrofulous ulcers; but we have reason to believe, when this happens, that there has been a predisposition in the habit to this disease. In short, whatever tends to vitiate the humors or relax the solids, paves the way to the scrofula; as the want of proper exercise, too much heat or cold, confined air, unwholesome food, bad water, the long use of poor, weak, watery aliments, and the neglect of cleanliness. Nothing tends more to induce this disease in children than allowing them to continue long wet.*

Symptoms.—At first, small knots appear under the skin, or behind the ears, which gradually increase in number and size, till they form one large hard tumor. This often continues for a long time without breaking, and when it does break, it only discharges a thin *sanies*, or watery humor. Other parts of the body are likewise liable to its attack, as the arm-pits, groins, feet, hands, eyes, and breast. Nor are the internal parts exempt from it. It often affects the lungs, liver, or spleen; and I have frequently seen the glands of the mesentery greatly enlarged by it.

Those obstinate ulcers which break out upon the feet and hands with swelling, and little or no redness, are of the scrofulous kind. They seldom discharge good matter, and are exceedingly difficult to cure. They are with difficulty brought to a suppuration, and when opened they only discharge a thin ichor. There is not a more general symptom of scrofula than a swelling of the upper lip and nose. It sometimes begins in a toe or finger, which continues long swelled, with no great degree of pain, till the bone becomes carious.

Regimen.—As this disease proceeds in a great measure, from relaxation, the diet ought to be nourishing, but at the same time light and of easy digestion; as the lean parts of tender and digestible meats; light animal broths; liquid, mucilaginous, or farinaceous preparations; barley, rice, boiled apples, turnips, and milk. The air ought to be open, dry, and not too cold, and the patient should

* The scrofula, as well as the rickets, is found to prevail in large manufacturing towns where people live grossly, and lead sedentary lives.

take as much exercise as he can bear. This is of the utmost importance. Children who have sufficient exercise are seldom troubled with the scrofula.

Treatment.—The vulgar are remarkably credulous with regard to the cure of the scrofula; many of them believing in the virtue of the royal touch, that of the seventh son, &c. The truth is, we know but little either of the nature or cure of this disease, and where reason or medicines fail, superstition always come in their place. The subinuriate of mercury, however, is by far the most celebrated of all the purgative medicines which have been employed in the treatment of scrofula; and it is undoubtedly a serviceable remedy in many stages of the disease. In prescribing it we must be careful not to give it in such a manner as to produce salivation. When given cautiously and in moderate doses, so as to act merely as an alterative or gentle purgative, it agrees well in scrofulous complaints, and greatly contributes to discuss tumors and resolve indurations of this nature.

There is nothing more pernicious than the custom of plying children in the scrofula with strong purgative medicines. People imagine it proceeds from humors which must be purged off, without considering that these purgatives increase the debility and aggravate the disease. It has indeed been found, that keeping the body gently open for some time, especially with sea-water, has a good effect; but this should only be given in gross habits, and in such quantity as to procure one, or at most two stools every day.

Bathing in salt-water has likewise a very good effect, especially in the warm season. I have often known a course of bathing in salt-water, and drinking it in such quantities as to keep the body gently open, cure scrofula, after many other medicines had been tried in vain. When salt-water cannot be obtained, the patient may be bathed in fresh water, and his body kept open by small quantities of salt and water, or some other mild purgative.

Next to cold bathing and drinking the salt-water, we would recommend the quinine. Burnt sponge is another remedy which has been much administered in this disease, and frequently with advantage. It may be given either in the form of bolus or draught. A more active medicine, however, is the carbonate of soda in doses from ten to twenty grains to a drachm, twice or thrice a-day. The cold bath may be used in summer, and the quinine in winter.

[“The iodine has of late years been a good deal used in scrofulous affections; and in certain forms of the disease, it is, without doubt, deserving of much attention. In mere local lymphatic

tumors, its powers are unquestionable; but it does not appear to possess any decided remedial powers over glandular enlargements and ulcerations, depending on a scrofulous habit of body. In scrofulous inflammation of the eyes, it is said, by some writers, to be very useful. For the removal of insulated strumous tumors about the neck, it is decidedly the most effectual remedy we possess.

Take Hydriodate of potash, two scruples.
 Lard, one ounce and a half.
 Liquor of caustic potash, five drops.

Make an ointment. Of this ointment, a portion about the size of a small nutmeg should be rubbed in upon the tumor twice daily.

It should be observed, however, that preternatural sensibility or irritability of the system; prominent derangement of the stomach and bowels; fever; general plethora; diarrhœa; a disposition to hemorrhages; and an inflamed or sensible state of the tumors, contra-indicate the employment of this article, whether used externally or internally. (Eberle.) The alkalies have long been regarded as peculiarly beneficial in the management of scrofulous affections. Mr. Farr strongly recommends Brandisk's *liquor potassæ*, as a remedy for indurated, inflamed, and suppurated scrofulous tumors about the neck, as well as "in the thickening of the ligaments and periosteum, with caries of the bones." A drachm of this preparation is to be given twice a-day to a child from four to six years old; to a patient from six to eight years old, one drachm and a half; and to one over eight years old, two drachms are to be given in any agreeable drink. Its operation is slow, and must be long continued."]

Hemlock may sometimes be used with advantage in scrofula.—Some lay it down as a general rule, that the sea-water is most proper before there are any suppuration or symptoms of *tubercles*; the quinine, when there are running sores, and a degree of hectic fever; and the hemlock in old inveterate cases, approaching to the scirrhus or cancerous state. Either the extract or the fresh juice of this plant may be used. The dose may be small at first, and increased gradually as far as the stomach is able to bear it.

External applications are of little use. Before the tumor breaks, nothing ought to be applied to it, unless a piece of flannel, or something to keep it warm. After it breaks, the sore may be dressed with some digestive ointment. What I have always found to answer best, was the yellow basilicon mixed with about a sixth or eighth part of its weight of red precipitate of mercury. The sore may be dressed with this twice a-day; and if it be very fungous,

and does not digest well, a larger proportion of the precipitate may be added.*

Scrofulous ulcers which had resisted many other remedies have healed under a weak solution of nitric acid in water (thirty drops or less of the former to a pint of the latter). In spreading and irritable sores, the application of an aqueous solution of opium, or of hemlock, and afterwards a solution of zinc, may be beneficial. Where the granulations rise above the surface, and are broad and flabby, and where pressure cannot be applied, the sorrel poultice† has proved useful. The topical application of bruised sorrel leaves has been recommended in very flattering terms as contributing essentially to the cicatrization of indolent scrofulous ulcers.

In scrofulous sores of an ugly, gleeting, and ill-conditioned appearance, much benefit has been obtained by the application of a poultice made with crumbs of bread moistened with a solution of about an ounce of the crystals of soda in a quart of water. The sub-borate of soda in the proportion of half a drachm to one drachm mixed with an ounce of spermaceti ointment, or Turner's cerate, has been found an efficacious application to scrofulous ulcers; and by such dressings they have been known to heal in a short space of time, when other applications have entirely failed.

Medicines which mitigate this disease, though they do not cure it, are not to be despised. If the patient can be kept alive by any means till he arrives at the age of puberty, he has a great chance to get well; but if he does not recover at this time, in all probability he never will.‡

* The application of the lunar caustic tends very much to promote the cure of scrofulous ulcers, after they have broke, for they should never be opened. They will bear a pretty free daily application of this stimulus, not only with impunity, but advantage.

† Sorrel, a pound, to be beaten to a pulp, and applied to the parts affected.

‡ [The views of Dr. Buchan, with regard to the causes, pathology, and treatment of scrofulous diseases, are those of the great mass of physicians; and it has, therefore, been thought proper to retain them in this work. Dissenting, however, in several important particulars, from the plan of treatment recommended by him, I beg leave to submit the following.

"A scrofulous habit is always considered one of debility. Hence, the common practice has been to resort to tonics, in order to build up the patient's constitution. The result of this practice is its most signal condemnation. It has always failed, because it is founded on erroneous physiological views.

"The system is in a state of great debility, to be sure; but instead of requiring tonics, requires the very reverse of what are usually so denominated. They are the source of failure. The debility is so great, that the excitement created by the tonic cannot be borne; there is not sufficient stamina in the system to maintain it at the point to which it is raised, and in attempting to do this, it wears itself out by overaction, and sinks below the point at which the tonic found it. Such medicines are of no effect in removing the cause of

Observations.—One of the most effectual means of guarding against scrofula, is a constant attention to keep the child dry and clean, by the immediate removal of all impurities.

the disease, which is, in every instance, either directly or indirectly, chylopoietic derangement. So far from stimulating, nothing calculated to increase the pulse or produce excitement, should, at any period of the cure, be allowed.

"In regard to the employment of medicinal agents, emetics and cathartics are the remedies to be relied on, especially the former.

"The object is, to bring the blood-making organs into a healthy condition, that they may elaborate chyle of the very best quality; for it is only by this that the system is to be sustained and renovated, and the local consequences of the affection repaired. The secretions are always deficient or depraved; and hence, emetics and mercurial cathartics, by their salutary influence on the secreting organs, and especially the liver, are our best remedies.

"If, however, the system be so much prostrated, as not to be able to bear emetics as often as desired, they may be suspended at intervals; taking care to keep up effectually the action of the liver and bowels. If the bowels are disposed to torpidity, one or two grains of tartar may be combined with the cathartic; or if they are inclined to be very irritable, calomel with a small portion of ipecacuanha, or rhubarb, will answer better.

"In making choice of an emetic, the condition of the system at the time is always to be taken into consideration. Tartar may be required to-day, if constipation exists, or we wish to make a very powerful and permanent impression on the system—but if it has a tendency to pass off by the bowels, producing serous evacuations and debilitating the patient, ipecacuanha will answer a better purpose; or, if that becomes too irritating, salt water or mustard will fulfil the indication completely; by relieving internal congestion, equalizing the circulation, reducing febrile excitement, if present, and arousing the dormant energies of the nervous system.

"Emetics and cathartics are to be repeated as often as the circumstances attending each particular case may require. In some cases, emetics may be called for every day for months, and cathartics, (which should always contain a portion of mercury,) nearly as often; but as a general rule, applicable to all cases, they are to be continued, at proper intervals, until the various secretions become perfectly healthy, at which time the disease, both local and general, will be found to be cured. As to the time for exhibiting these remedies; the emetic in the morning, and the cathartic at night, will probably be found as eligible a rule as could be laid down. The convenience of the patient must be consulted, when nothing forbids it.

"Of not less importance to the accomplishment of our object, is the quantity and quality of our patient's diet. In vain may we exhibit remedies unless this be attended to. The stomach and assistant chylopoietic viscera are in a debilitated condition, and unable to perform their customary functions. In common with the other secretions, the gastric is also depraved. Hence, if we overload the stomach with the most digestible and nutritious diet, or introduce only a small quantity of that which is difficult of assimilation, on account of the deficiency of gastric liquor it cannot be digested; but, acting as an irritant on the alimentary tract, only adds to the already existing disease. The smallest quantity of food, of the mildest and most digestible character, is to be allowed. It will afford more chyle and of a better quality, with less expenditure of the vital energies, than a large supply. The design is not to fill the vascular system, but to have what does enter it of the purest character. Indian-meal mush, skimmed milk, animal jellies, water gruel, bread of unbolted flour, and similar articles, may be allowed as circumstances may dictate. In an especial manner is the black bread serviceable, on account of its laxative properties, assisting to supply the deficiency of the biliary secretion."—*Norwood on Spinal Diseases*, p. 33—4.]

Washing children frequently, forms a necessary part of this plan. At first, lukewarm water is proper, as being best suited to the new-born infant, on account of the warm temperature to which he had been accustomed in the womb, and on account of the delicacy of habit which he may have inherited from his parents. But the warmth of the water should be gradually diminished as the infant gains strength, till it can be used quite cold with great safety and benefit. The cold bath, so essential to the cure of scrofula, operates with still greater certainty as a preventive. It braces and invigorates the frame, and thus directly counteracts one of the principal causes of the evil, which is relaxation. The whole body ought to be washed every morning, and the lower half every night, after which the child is to be instantly wiped dry, and wrapped up in a warm blanket, to guard against the danger of sudden cold, and to secure all the advantages of so salutary an operation.

My former arguments, in favor of light and loose clothing for children in general, acquire double force when there is the least reason to dread the scrofula. It is little short of murder to keep an infant of a delicate habit smothered in clothes, and panting in a sort of vapor-bath caused by the noxious steams of its own body. The covering both by day and night should be as light as is consistent with due warmth. The linen next the skin, which is always imbibing perspirable matter, must be changed often; and the same dress ought never to be kept on for more than twelve hours together.

Wholesome unconfined air, and frequent exercise, are grand preservatives from all diseases, but especially from scrofula. It is not enough to select the most spacious and lofty apartment in the house for the nursery; children should be taken out into the fields every day, particularly about noon, unless the heat be intense, as the most salutary exhalations from the earth then abound, and the air is impregnated with the balmy essence of the sweetest plants and flowers. Cold and wet weather being deemed one of the exciting causes of scrofula, any wanton exposure to it would be improper; though even in this respect, less caution is necessary, if the use of the cold bath be continued every morning. This will brace the thinnest, finest skin, and harden it against the impressions of a damp, chilly atmosphere.

Exercise, besides strengthening the whole habit and powerfully assisting all the vital functions, has a direct tendency to prevent

obstructions of every kind, and those of the glands in particular, which constitute the earliest symptoms of the disease in question.

On the subject of diet, some little deviations must be made from my general plan, in rearing the child of scrofulous parents, or one that is marked with what may be called a pre-disposition to this disease, a thin skin, and a general weakness and flaccidity of the habit. Extraordinary care should be taken to secure a very healthy nurse for such a child; and, after it is weaned, the use of animal food, but light and easy of digestion, should be gradually introduced, and freely allowed at dinner every day. In case of any just apprehensions of the scrofula, we must not trust to a mild regimen, to milk and vegetables, though in general so wholesome and nutritious. They cannot give that tone to the stomach, and that energy to the whole system, which they now stand in need of. A gross, full diet will certainly occasion humors and eruptions; but these are very different from the scrofula, and far more easily cured. A poverty of the blood, a relaxation of the fibres, those sure attendants, if not the principal causes of the evil, require the most strengthening articles both of food and drink.

But I must reprobate, above all things, butter in every form, and other oily substances, which are so apt to turn rancid on the stomach, loading it with phlegm, relaxing and impeding its action, inducing a debility of the solids, and occasioning a great number of complaints, as well as glandular obstructions. One of the worst compositions, of which butter or fat always forms a part, is pastry. I really shudder whenever I see a delicate woman, or a weak child, greedily devouring those palatable poisons. Let it be understood, that I include in this censure gingerbread, plumcakes, and all trash of the like kind. Indeed, a child of a scrofulous habit should never eat any preparation of flour, except plain, well-made, and well-baked bread.*

NEGRO CONSUMPTION.—SCROFULA.

[THE great scourge of the African race, in the United States, is Scrofula, which, under the vague names of "negro poison," or

* Delicate children are greatly injured by the common habit of bibbing too much thin warm fluid, such as weak tea. They are chiefly enticed to this practice by the sweetness of these drinks. Such children ought not to be permitted to drink any thing sweet or warm. The stomach is braced by cold applications as well as the skin.

"negro consumption," carries annually hundreds to their graves.* While they are exempt, in a remarkable degree, from many of the diseases which prevail among the white population, there is scarcely a negro to be found in the middle and northern states free from a scrofulous taint. It is hereditary, and often comes on when it has not been invited by exposure, or poor living. The frequency of the disease, however, results from the inaptitude of the climate. The delicate organization of the human frame enables man to adapt himself to every climate, but it renders him, at the same time, more liable to disease. And the condition of the negroes precludes the exercise of that ingenuity, by which the free man is enabled to shield himself against the rigors of the frigid, and the sultry heat of the torrid zone. We find this disease to abound as we travel to the north, and to become less common as we approach the region in which nature cast their lot. Indeed, it is stated, by all authorities, that notwithstanding the frequency of the disease among the blacks in this climate, scrofula is an unknown disease in Africa. They were fitted to inhabit under a different track of the sun, and nature thus shows that her laws may not be infringed with impunity.

Cold is generally regarded as the most powerful of the exciting causes of scrofula. In the East and West Indies, says Dr. Gregory, "scrofula is hardly known; but when the natives are either brought into this, or any other European country, they suffer from it severely." "The prevalence of scrofula," he continues, "is directly proportioned to the coldness, or more properly to the variableness of the climate." Lloyd enumerates "the common debilitating powers of cold, meagre or unwholesome food, want of cleanliness, and a close and suffocating atmosphere," as the most prolific sources of strumous complaints. Dr. Good considers the removal from an intertropical region, where the frame has been debilitated, to countries of a lower temperature, as the most productive cause. The cold, he remarks, is not so pernicious when it is constant, and not connected with moisture and impurities, or favored by a scanty or imnutritious diet. A French writer says, "that exposure to prolonged cold is the most powerful of the causes which may induce pulmonary consumption; and that on the contrary, living in a warm place is so powerful a remedy against the disease, that it is of itself sufficient to cure it in all

* In the preparation of this article, I have availed myself of the only publication which I have ever met with on the subject,—namely, "Remarks on Struma Africana," &c. By *Leonard P. Yundell*, M. D. Dr. Y. had much experience in the disease.

cases where the evil has not reached its highest degree." The same remarks are quite as applicable to scrofula, of which consumption, in fact, is but a modification. The action of cold, therefore, we may say, is the exciting cause of the disease under consideration, and its efficacy, of course, is greatly increased, when favored by hereditary predisposition and deficient clothing. (Yandell.)

Symptoms.—The skins of negroes who have the scrofulous taint, are uniformly of a pale, dry, and husky or branny appearance. They have, while still able to attend to business, an inanimate and unhealthy look. The tongue and gums are pale, the former often covered with a white mucus. The cornea (or transparent part of the eye) has a bluish white color. The nostrils and upper lip are generally somewhat protruded. The circulation at first is languid; they bear cold badly; but as the disease progresses, and the tubercles commence their growth, there is some development of arterial excitement. The pulse becomes quick and irritable, and the heat of the skin is raised. The whole expression of the face, and all the movements of the individual evidence deep-seated disease. In the progress of the complaint, respiration is disturbed; the breathing becomes quick and laborious, and on slight exertion, the patient has the appearance of panting. The lungs seem confined, as if wanting room to dilate. The patient often groans in his sleep. The abdomen becomes tumid; occasionally, towards the termination of the disorder, fluctuation is perceived. The urine is generally scanty; bowels at first constipated, but disturbed towards the close of the disease by intractable diarrhœa. The febrile excitement during the whole progress of the disease is never very high. The inflammation seems of the sub-acute kind. An enlargement of the lymphatic glands of the neck sometimes accompanies these symptoms, which is not unfrequently a favorable symptom, evidencing that the disease is disposed to attack external parts. Cough sometimes attends, but not invariably. The appetite is generally unimpaired; occasionally vitiated. The patients complain but little; and there seems nothing in their case to account for the decline in flesh and strength which we see steadily progressing. There is no more remarkable feature in the disease than this. In fact, it is this circumstance that gives rise to the general impression among the blacks, and among a great majority of the whites, that such patients are poisoned.

So general is this belief among all classes, that there is hardly a

neighborhood in which there does not reside an individual who has to bear the weighty charge of poisoning, by the actual administration of some unknown drug, or by "spells and incantations," every individual who is afflicted with the disease under consideration. It is not considered necessary that the poison should be swallowed by the unfortunate sufferer, or even come in contact with him;—it is all-sufficient that it be prepared *for him*, with certain mystic ceremonies, "or laid in his path," and its work of destruction proceeds with a slow but certain pace. However much the better informed may be disposed to smile at so ridiculous an idea, it has a far different effect on the negro. A hint or a suspicion that the "charm has been laid," has as powerful an effect upon his uneducated mind, as the dreaded "Obeah" has upon his brethren of the West Indies—operating upon his superstitious fears, it brings disease and death.

Treatment.—Much may be done in the prevention of this disease; more perhaps than in most others; for the causes of few others are so well traced. Too little care is paid generally by masters to the comfort and cleanliness of their slaves. Their houses should be roomy, raised considerably above the ground, and so constructed as to admit of free ventilation. To attain the latter end, it is important that they be not too much crowded. Negroes require to be warmly clad in winter; and attention should be paid, especially to the children, that their clothing be often enough changed. This is important on more accounts than one. Dr. Rush, in his inquiry into the influence of physical causes upon the *moral* faculty, remarks, "that too much cannot be said in favor of *cleanliness*, as a means of promoting virtue." I can imagine few things which would contribute more to the health, comfort, and good conduct of slaves, than an increased attention on the part of their owners to cleanliness in their dress and habitations.

Another object of the highest importance is to keep them *warm*. Many white persons find it indispensable to their health to wear flannel during the winter, which alone affords them adequate protection against the sudden transitions of our variable climate. The same may be done by feeble negroes, and especially by those predisposed to scrofula, who certainly are at least as much affected by the dampness and coldness of our winters, as their masters. By this simple measure I have seen many beings, who appeared to be in the incipient stage of the disease, invigorated and made to enjoy good health. The diet of our black population, as a general rule, is simple, nutritive and abundant; and with a little more at-

tention to their clothing—the addition of a flannel shirt to their winter-suit—I doubt not that the lives of numbers who now die yearly of the dreaded “negro-poison,” might be preserved. Children predisposed to the complaint, have frequently a depraved appetite, causing them to eat dirt, and the parents generally from a mistaken view of the cause of the practice, attempt to correct it by the application of the rod. This propensity is easily destroyed, and the general tone of the system at the same time improved, by the administration of any of the preparations of iron. (Yandell.)

The general treatment of “negro consumption,” is the same recommended in the preceding article on “Scrofula.” Emetics, purgatives, and a strict adherence to a bland, unstimulating diet, can alone be relied on for success. The use of the root of the poke-weed, and iodine, has frequently been attended with the happiest results, but they cannot be recommended as specifics.

“In countries where a meagre or innutritious diet is one of the causes of scrofula, a plan of treatment so antiphlogistic as the one which has been recommended, would be deemed unnecessary, perhaps positively injurious. But among the people who inhabit our fruitful country, where the diet used is so stimulating, where disease is so generally inflammatory, and so often modified by the prevalence of malaria (poisonous air), our resort, in nearly all our complaints, must be to depleting and alterative remedies.

If by means of emetics, cathartics, &c., we have succeeded in arresting the disease, our next object is to remove the predisposition to the complaint, and invigorate the system. In effecting this, the mineral acids, and especially the nitric, or, which is perhaps superior, the nitro-muriatic, are among the best remedies. Their impression is gentle, and at the same time permanent.” They may be given as directed in chronic inflammation of the liver. The sulphate of quinine is also a valuable tonic in such cases. Three or four grains may be administered at regular intervals every day. “The different forms of iron should be preferred for children, when it is our wish to ward off the disease; and they have great efficacy also in building up the exhausted energies of the frame, when all inflammatory action is subdued.] (Yandell.)

THE ITCH.—PSORA.

THOUGH this disease is commonly communicated by infection, yet it seldom prevails where due regard is paid to cleanliness, fresh

air, and wholesome diet. It generally appears in form of small watery pustules, first about the wrists, or between the fingers; afterwards it affects the arms, thighs, legs, &c. These pustules are attended with an intolerable itching, especially when the patient is warm in bed, or sits by the fire. Sometimes, indeed, the skin is covered with large blotches or scabs, and at other times with a white scurf, or scaly eruption. This last is called the Dry Itch, and is the most difficult to cure.

The itch is seldom a dangerous disease, unless when it is rendered so by neglect or improper treatment. If it be suffered to continue too long, it may vitiate the whole mass of humors; and, if it be suddenly driven in, without proper evacuations, it may occasion fevers, inflammations of the viscera, or other internal disorders.

The best medicine yet known for the itch is sulphur, which ought to be used both externally and internally. The parts most affected may be rubbed with an ointment made of the flour of sulphur, two ounces; crude sal ammoniac finely powdered, two drachms; hog's lard, or butter, four ounces. If a scruple or half a drachm of the essence of lemon be added, it will entirely take away the disagreeable smell. About the bulk of a nutmeg of this may be rubbed upon the extremities at bed time, twice or thrice a-week. It is seldom necessary to rub the whole body; but when it is, it ought not to be done all at once, but by turns, as it is dangerous to stop too many pores at the same time.

Before the patient begins to use the ointment, he ought, if he be of a full habit, to bleed or take a purge or two. It will likewise be proper, during the use of it, to take every night and morning as much of the flour of brimstone and cream of tartar, in a little molasses, or new milk, as will keep the body gently open. He should beware of catching cold, should wear more clothes than usual, and take every thing warm. The same clothes, the linen excepted, ought to be worn all the time of using the ointment; and such clothes as have been worn while the patient was under the disease, are not to be used again, unless they have been fumigated with brimstone, and thoroughly cleansed, otherwise they will communicate the infection anew.*

* Sir John Pringle observes, that though this disease may seem trifling, there is no one in the army that is more troublesome to cure, as the infection often lurks in clothes, &c. and breaks out a second, or even a third time. The same inconveniency occurs in private families, unless particular regard be paid to the changing or cleaning of their clothes, which last is by no means an easy operation.

I never knew brimstone, when used as directed above, fail to cure the itch; and I have reason to believe, that, if duly persisted in, it will never fail; but if it be only used once or twice, and cleanliness neglected, it is no wonder if the disorder returns. The quantity of ointment mentioned above will generally be sufficient for the cure of one person; but, if any symptoms of the disease should appear again, the medicine must be repeated. It is both more safe and efficacious when persisted in for a considerable time, than when a large quantity is applied at once. As most people dislike the smell of sulphur, they may use in its place the powder of white hellebore root made up into an ointment, in the same manner, which will seldom fail to cure the itch.

People ought to be extremely cautious lest they take other eruptions for the itch; as the stoppage of these may be attended with fatal consequences. Many of the eruptive disorders to which children are liable, have a near resemblance; and I have often known infants killed by being rubbed with greasy ointments that make these eruptions strike suddenly in, which nature had thrown out to preserve the patient's life, or prevent some other malady.

As the external use, however, of sulphur, is frequently attended with much inconvenience from its disagreeable smell, other remedies are frequently substituted. The most efficacious of these are a solution of arsenic or oxymuriate of mercury,* different combinations of sulphuric acid; white hellebore, and a strong decoction of digitalis. In some cases, an infusion of tobacco leaves, used as a lotion, has cured the itch.

Take Sulphuric acid, half a drachm.
Prepared lard, one ounce.

Make an ointment.

Much mischief is likewise done by the use of mercury in this disease. Some persons are so imprudent as to wash the parts affected with a strong solution of the corrosive sublimate. Others use the mercurial ointment, without taking the least care either to avoid cold, keep the body open, or observe a proper regimen. The consequences of such conduct may be easily imagined. I have known even the mercurial girdles produce bad effects, and would advise every person, as he values his health, to beware how he uses them. Mercury ought never to be used as a medicine without the greatest care. Ignorant people look upon these gir-

* Take Oxymuriate of Mercury, 6 grains. Or, Take Oxymuriate of Mercury, 12 grains.
Muriate of Ammonia, 10 grains. Muriate of Ammonia, 1 drachm.
Distilled Water, 12 ounces. Decoct. of white hellebore, 12 ounces.
Make a lotion. Make a lotion, and wash the affected parts every night.

dles as a kind of charm, without considering that the mercury enters the body.

Those who would avoid this detestable disease, ought to beware of infected persons, to use wholesome food, and to study universal cleanliness.

ASTHMA.—PHTHISIC.

THE asthma is a spasmodic* disease of the lungs, coming on by paroxysms, which seldom admits of a cure. Persons in the decline of life are most liable to it. It is distinguished into the moist and dry, or humoral and nervous. The former is attended with expectoration or spitting; but in the latter the patient seldom spits unless sometimes a little tough phlegm, by the mere force of coughing.

It rarely appears before the age of puberty, and seems to attack men more frequently than women; particularly those of a full habit, in whom it seldom fails, by frequent repetition, to occasion some degree of emaciation. When the disease is attended with an accumulation and discharge of humors from the lungs, it is called the humid asthma; but when it is unaccompanied by any expectoration, it is known by the name of the dry or spasmodic asthma.

Causes.—The asthma is sometimes hereditary. It may likewise proceed from a bad formation of the breast; the fumes of

* Dr. Cullen, and most other writers, refer the proximate or immediate cause of asthma to a preternatural or spasmodic constriction of the muscular fibres of the air-cells of the lungs, which not only prevents their being so dilated as to admit of a free and full inspiration, but also gives them a rigidity which interferes with a free and full expiration. This doctrine, however, has been disputed by Dr Bree, who, in a very ingenious treatise on this disease, gives it as his opinion that irritation situated within the bronchia or air-cavities, and arising either from an effusion of serum, or from aerial acrimony, is the true proximate cause of convulsive asthma. The mucus, which is excreted in the course of the disease, and which has been looked upon by Dr. Cullen and others as only an effect, Dr. B. views as a prominent cause of the paroxysm; or when it is absent, only yielding to a different cause equally irritating to the organ, and exciting spasmodic contractions of the respiratory muscles. Dr. Darwin says, that whatever may be the remote causes of paroxysms of asthma, the immediate cause of the convulsive respiration, whether in the common asthma, or in what is termed the convulsive, which are perhaps only different degrees of the same disease, must be owing to violent voluntary exertions to relieve pain, as in ot' er convulsions: and the increase of irritability to external stimuli, or of sensibility during sleep, must occasion them to commence at this time.

metals or minerals taken into the lungs; violent exercise, especially running; the obstruction of customary evacuations; sudden retrocession of the gout, or striking-in of eruptions; and violent passions of the mind. In a word, the disease may proceed from any cause that either impedes the circulation of the blood through the lungs, or prevents their being duly expanded by the air.

Symptoms.—Asthma is known by a quick laborious breathing, which is generally performed with a kind of wheezing noise. Sometimes the difficulty of breathing is so great, that the patient is obliged to keep in an erect posture, otherwise he is in danger of being suffocated. A fit or paroxysm of the asthma generally happens after a person has been exposed to cold easterly winds, or has been abroad in thick foggy weather, or has got wet, or continued long in a damp place under ground, or has taken food which the stomach could not digest.

The paroxysm is commonly ushered-in with a listlessness, want of sleep, hoarseness, a cough, belching of wind, a sense of heaviness about the breast, and difficulty of breathing. To these succeed heat, fever, pain of the head, sickness and nausea, great oppression of the breast, palpitation of the heart, a weak and sometimes intermitting pulse, an involuntary flow of tears, bilious vomiting, &c. All these symptoms grow worse towards night; the patient is easier when up than in bed, and is very desirous of cool air.

After some nights passed away in this manner, the fits at length moderate, and suffer more considerable remissions, particularly when they are attended by a copious expectoration in the mornings, and when this continues from time to time, throughout the day; and, the disease going off at last, the patient enjoys his usual rest by night without further disturbance. The pulse, during the fit, is usually not much affected, but in a few cases there is a frequency of it, with some degree of thirst and other febrile symptoms.

Regimen.—The food ought to be light and of easy digestion. Boiled meats are to be preferred to roasted, and the flesh of young animals to that of old. All windy food, and whatever is apt to swell in the stomach, is to be avoided. Light puddings, white broths, and ripe fruits baked, boiled or roasted, are proper. Strong liquors of all kinds, especially malt liquor, are hurtful. The patient should eat a very light supper, or rather none at all, and should never suffer himself to be long costive. His clothing should be warm, especially in the winter season. As all disorders of the

breast are much relieved by keeping the feet warm, and promoting perspiration, a flannel shirt or waistcoat, and thick shoes, will be of singular service.

But nothing is of so great importance in the asthma as pure and moderately warm air. Asthmatic people can seldom bear either the close heavy air of a large town, or the sharp keen atmosphere of a bleak hilly country: a medium, therefore, between these is to be chosen. The air near a large town is often better than at a distance, provided the patient be removed so far as not to be affected by the smoke. Some asthmatic patients indeed breathe easier in town than in the country; but this is seldom the case, especially in towns where much coal is burnt. Asthmatic persons who are obliged to be in town all day, ought at least to sleep out of it. Even this will often prove of great service. Those who can afford it ought to travel into a warmer climate. Many asthmatic persons who cannot live in Britain, enjoy very good health in the south of France, Portugal, Spain, or Italy.

Exercise is likewise of very great importance in the asthma. The blood of asthmatic persons is seldom duly prepared, owing to the proper action of the lungs being impeded. For this reason such people ought daily to take as much exercise, either on foot, horseback, or in a carriage, as they can bear.

Treatment.—Almost all that can be done by medicine in this disease, is to relieve the patient when seized with a violent fit. This indeed requires the greatest expedition, as the disease often proves suddenly fatal. During the paroxysm the body is generally bound, a purging clyster, with a solution of assafœtida, ought therefore to be administered, and if there be occasion, it may be repeated two or three times. The patient's feet and legs ought to be immersed in warm water, and afterwards rubbed with a warm hand, or dry cloth. Bleeding, unless extreme weakness or old age should forbid it, is highly proper. If there be a violent spasm about the breast or stomach, warm fomentations or bladders filled with warm milk and water, may be applied to the part affected, and warm cataplasms to the soles of the feet. The patient must drink freely of diluting liquors, and may take a tea-spoonful of the tincture of castor and saffron mixed together in a cup of valerian-tea, twice or thrice a day. Sometimes a vomit has a good effect, and snatches the patient, as it were, from the jaws of death. This, however, will be more safe after other evacuations have been premised. A very strong infusion of roasted coffee is said to give ease in an asthmatic paroxysm.

In the moist asthma, such things as promote expectoration or spitting, ought to be used; as the syrup of squills,* gum-ammoniac, and such like. A common spoonful of the syrup or oxymel of squills, mixed with an equal quantity of cinnamon-water, may be taken three or four times through the day, and four or five pills made of equal parts of assafœtida and gum-ammoniac at bed-time.†

A combination of foxglove and opium has proved highly advantageous in spasmodic asthma, when given in the dose of half a grain of each every four or five hours. In the pituitous asthma, squill and foxglove might be more advisable.‡ On the authority of a modern writer, galvanism was found most efficacious in relieving habitual asthma.||

For the convulsive or nervous asthma, antispasmodics and tonics are the most proper medicines. The patient may take a tea-spoonful of the paregoric elixir twice a-day. Bitter infusions, chalybeate waters, and preparations of iron, particularly the sub-carbonate and sulphate, in short, every thing that braces the nerves or takes off spasm, may be of use in a nervous asthma.

[The smoking of the leaves and root of the Jamestown-weed (*datura stramonium*) is strongly recommended as an expectorant and antispasmodic in this disease. The skunk cabbage is also highly extolled by many who have given it a trial. The dose of the dried root, in powder, is from thirty to forty grains, repeated as

* Take	Mixture of Ammoniacum,	4 ounces.
	Oxymel of Squills,	3 drachms.
	Solution of Antimony Wine,	40 drops.
	Distilled Vinegar,	$\frac{1}{2}$ ounce.

Make a mixture; of which two table-spoonfuls are to be taken often, or when either the cough or shortness of breath is troublesome. Or,

Take	Mixture of Ammoniacum,	1 ounce.
	Solution of Acetated Ammonia,	2 drachms.
	————Tartarized Antimony,	15 drops.
	Syrup of Tolu,	1 drachm.

Make a draught, to be taken every six hours.

† After copious evacuations, large doses of ether have been found very efficacious in removing a fit of the asthma. I have likewise known the following mixture produce very happy effects: To four or five ounces of the solution or milk of gum ammoniac, add two ounces of simple cinnamon water, the same quantity of balsamic syrup, and half an ounce of paregoric elixir. Of this two table-spoonfuls may be taken every three hours.

‡ Take	Foxglove in powder,	6 grains.
	Compound Squill Pill,	2 scruples.
	Syrup of Tolu, enough to make the mass into 12 pills, one to be taken three or four times a-day.	

¶ See Experimental Inquiry into the Laws of the Vital Functions, &c. by A. P. Wilson Philip, M. D. p. 329.

often as circumstances may require. "Of all the remedies we possess, however, the *lobelia inflata* is, I think, decidedly the most beneficial in this affection."—(Eberle.) A table-spoonful of the saturated tincture may be given every ten or fifteen minutes.]

In addition to other tonics, exercise either in swinging, sailing, riding in a carriage, or on horseback, but particularly the latter, together with a change of air, will be beneficial to asthmatics: they should try different situations to live in, where the disease is rendered less distressing, or is entirely removed. Their clothing should be warm.

In the arthritic asthma, arising from the retrocession of gout, there are usually intermissions and other irregularities of the pulse, great anxiety of countenance, with a bluish tinge thereon. Large doses of opium, ether, camphor, and ammonia are the medicines most likely to afford relief. Sometimes it is necessary to bleed the patient, and often to apply a blister to the chest.

In every species of asthma setons and issues have a good effect they may either be set in the back or side, and should never be allowed to dry up. We shall here, once for all, observe, that not only in the asthma, but in most chronic diseases, issues are extremely proper. They are both a safe and efficacious remedy; and though they do not always cure the disease, yet they will often prolong the patient's life.

This disease, though so common with us, is little known in mild climates; and, on that account, it is always advisable to try the effect of a change of climate, which has generally been attended with great benefit. I have already intimated what little confidence I had in the power of any medicine to perform a radical cure of the asthma; but there are many things that will give the patient ease, and, of course, tend to prolong his life. Much, also, may be done by regimen, when drugs are of little service; and I would therefore advise asthmatic patients to procure and keep by them rules for their management both in and out of the fit, adapted to their particular cases. By a proper attention to such rules a man may live many years, and enjoy tolerably good health.

I had a patient some time ago, who was often carried home to his wife in an apparently dying state. She felt little alarm, well knowing what was necessary to be done; and she always brought him about. This good woman did no more than may be done by any woman of common sense, if the doctor will deign to instruct her. General rules will not do; they must, as before observed, be suited to the patient's case and constitution. For want of some

such instructions, which a physician should take the earliest opportunity to give, a patient may lose his life before the doctor can be sent for, or any other medical advice or assistance procured.*

APOPLEXY.

APOPLEXY is a sudden loss of sense and motion, during which the patient is to all appearance dead; the heart and lungs, however, still continue to move. Though this disease proves often fatal, yet it may sometimes be removed by proper care. It chiefly attacks sedentary persons of a gross habit, who use a rich and plentiful diet, and indulge in strong liquors. People in the decline of life are most subject to the apoplexy. It prevails most in winter, especially in rainy seasons, and very low states of the barometer.

Causes.—The immediate cause of apoplexy is a compression of the brain, occasioned by an excess of blood, or a collection of watery humors. The former is called a *sanguine*, and the latter a *serous* apoplexy. It may be occasioned by any thing that increases the circulation towards the brain, or prevents the return of the blood from the head: as intense study; violent passions; † viewing objects for a long time obliquely; wearing any thing too tight about

* Asthma is a disease more immediately alarming in appearance, than dangerous in reality. It is well to be aware that there is hardly an instance known of a person dying during the asthmatic paroxysm. The duration of life seems even rarely to be shortened by this complaint. The celebrated Dr. Floyer, who wrote on asthma, although he labored under that disease during his whole life, died upwards of eighty years of age. He was of opinion that he shortened and lightened his fits by drinking some cups of very strong coffee without tea or sugar. I have known more than one asthmatic, who never lay down in bed for a long series of years, and notwithstanding, during the intervals of the fits, enjoyed tolerable health. Much depends on adhering to a dry diet, taking regular exercise, and on abstaining from those things which are known, by individual experience, to disorder the stomach. Considerable benefit is derived, in the nervous asthma, from occasionally taking as much genuine assafoetida, made into pills, as is sufficient to keep the body regular. Smoking the herb stramonium, shortens the duration of a fit, but does not permanently cure the disease, nor even diminish the number of paroxysms. See "*New Domestic Medical Manual*," by J. S. Forsyth.

† I knew a woman who, in a violent fit of anger, was seized with a sanguine apoplexy. She at first complained of extreme pain, *as if daggers had been thrust through her head*, as she expressed it. Afterwards she became comatose, her pulse sunk very low, and was exceeding slow. By bleeding, blistering, and other evacuations, she was kept alive for about a fortnight. When her head was opened, a large quantity of extravasated blood was found in the left ventricle of the brain.

the neck; a rich and luxurious diet; suppression of urine; suffering the body to cool suddenly after having been greatly heated; continuing long in a warm or cold bath; the excessive use of spices, or high-seasoned food; excess of venery; the sudden striking in of any eruption; suffering issues or setons suddenly to dry up, or the stoppage of any customary evacuation; a mercurial salivation pushed too far, or suddenly checked by cold; wounds or bruises on the head; long exposure to excessive cold; and poisonous exhalations.

Symptoms, and method of cure.—The usual forerunners of apoplexy are giddiness, pain and swimming of the head; loss of memory; drowsiness; noise in the ears; the nightmare; a spontaneous flux of tears, and laborious respiration. When persons of an apoplectic make observe these symptoms, they have reason to fear the approach of a fit, and should endeavor to prevent it by bleeding, a slender diet, and opening medicines.

In the sanguine apoplexy, if the patient does not die suddenly, the countenance appears florid, the face is swelled or puffed up, and the blood vessels, especially about the neck and temples, are turgid; the pulse beats strong; the eyes are prominent and fixed, and the breathing is difficult, and performed with a snorting noise. The excrements and urine are often voided spontaneously, and the patient is sometimes seized with vomiting.

In this species of apoplexy every method must be taken to lessen the force of the circulation towards the head. The patient should be kept perfectly easy and cool. His head should be raised pretty high, and his feet suffered to hang down. His clothes ought to be loosened, especially about the neck, and fresh air admitted into his chamber. His garters should be tied pretty tight, by which means the motion of the blood from the lower extremities will be retarded. As soon as the patient is placed in a proper posture, he should be bled freely in the neck or arm, and, if there be occasion, the operation may be repeated in two or three hours. A laxative clyster, with plenty of sweet oil or fresh butter, and a spoonful or two of common salt in it, may be administered every two hours; and blistering plasters applied between the shoulders, and to the calves of the legs.

[As soon as the patient can swallow, a large dose of calomel and jalap, or scammony, should be exhibited; and if it fails to operate promptly and freely, follow it with Epsom salts, or senna tea, or castor oil. The bowels should be kept open by the liberal use of such medicines as act on the liver.]

As soon as the symptoms are a little abated, and the patient is able to swallow, he ought to drink freely of some diluting opening liquor; as a decoction of tamarinds and liquorice, cream-tartar, whey, or common whey with cream of tartar dissolved in it. All spirits and other strong liquors are to be avoided. Even volatile salts held to the nose do mischief. Vomits for the same reason, ought not to be given, or any thing that may increase the motion of the blood towards the head.

In the serous apoplexy the symptoms are nearly the same, only the pulse is not so strong, the countenance is less florid, and the breathing less difficult. Bleeding is as necessary here as in the former case. The patient should be placed in the same posture as directed above, and should have blistering plasters applied, and receive opening clysters in the same manner. Purges are here likewise necessary, and the patient may drink strong balm tea. If he be inclined to sweat, it ought to be promoted by drinking small wine whey, or an infusion of *carduus benedictus*. A plentiful perspiration kept up for a considerable time has often carried off a serous apoplexy. Out of a fit of serous apoplexy the cephalic and nervous medicines recommended in palsy will be proper, taking occasionally some stomachic purgative. If the disease arise in consequence of a suppression of piles, leeches should be applied to the hemorrhoidal veins, fomentations must be employed, and the intestines stimulated by means of aloetic purges.

When apoplectic symptoms proceed from opium, or other narcotic substances taken into the stomach, vomits are necessary. The patient is generally relieved as soon as he has discharged the poison in this way.

Persons of plethoric or apoplectic make, or those who have been attacked by it, ought to use a very spare and slender diet, avoiding all strong liquors, spices, and high-seasoned food. They ought likewise to guard against all violent passions, and to avoid the extremes of heat and cold. The head should be shaved, and daily washed with cold water. The feet ought to be kept warm, and never suffered to continue long wet. The body must be kept open either by food or medicine, and a little blood may be let every spring and fall. Exercise should by no means be neglected; but it ought to be taken in moderation. Nothing has a more happy effect in preventing apoplexy than perpetual issues or setons; great care, however, must be taken not to suffer them to dry up, without opening others in their stead. Apoplectic persons ought never to go to rest with a full stomach, or to lie with their heads

low or to wear any thing too tight about their necks. When an attack of apoplexy is immediately threatened, blood-letting is the remedy most to be relied on, and the blood should be drawn either from the jugular vein or temporal artery, determining the extent of blood to be taken away by the circumstances of the case. When a lethargic disposition prevails, bleeding should also be adopted, particularly topical, from the temples, by means of leeches, or from the nape of the neck by the scarificator and cupping; the frequent use of cathartics, and a blister applied to the head or its immediate vicinity.

Take Submuriate of Mercury, six grains.
 Compound Extract of Colocynth, fifteen grains.

Make four pills for a dose.

The preceding cautions are of far greater importance than such persons may be aware of. The circulation, which is slower during sleep than when awake, is farther clogged by a fulness of the stomach. The low posture of the head not only favors, but seems to invite stagnation: and tight ligatures round the neck, impede the return of the blood from the vessels of the brain, so that an apoplexy, not only very naturally, but almost inevitably follows. Instead of being astonished at the number of those who go to bed in apparent health, and are found dead in the morning, we should consider it as a matter of much more surprise for a person of a plethoric habit, after unchecked indulgence in the pleasures of the table, to go to rest without any regard to the inclination of his head or the tightness of his collar, and ever to rise again.*

COSTIVENESS.

WE do not here mean to treat of those astrictions of the bowels which are the symptoms of diseases, as of the cholic, the iliac passion, &c., but only to take notice of that infrequency of stools which sometimes happens, and which in some particular constitutions may occasion diseases.

Costiveness may proceed from drinking rough red wines or oth-

* Persons inclined to apoplexy derive great benefit from cupping. This operation should never be omitted once or twice a-year.

er astringent liquors; or too much exercise, especially on horse-back. It may likewise proceed from a long use of cold insipid food, which does not sufficiently stimulate the intestines. Sometimes it is owing to the bile not descending to the intestines, as in the jaundice; and at other times it proceeds from diseases of the intestines themselves.

Excessive costiveness is apt to occasion pains of the head, vomiting colics, and other complaints of the bowels. It is peculiarly hurtful to hypochondriac and hysteric persons, as it generates wind and other grievous symptoms. Some people, however, can bear costiveness to a great degree. I know persons who enjoy pretty good health, yet do not go to stool above once a-week, and others not above once a fortnight; indeed I have heard of some who do not go above once a month.

Persons who are generally costive should live upon a moistening and laxative diet; as roasted or boiled apples, pears, stewed prunes, raisins, gruels with currants, butter, honey, sugar, and such like. Broths with spinage, leeks, and other soft pot-herbs, are likewise proper. Rye-bread, or that which is made of a mixture of wheat and rye together, ought to be eaten. No person troubled with costiveness should eat white bread alone, especially that which is made of fine flour. The best bread for keeping the body soluble is what in some parts of England they call *meslin*. It is made of a mixture of wheat and rye, and is very agreeable to those who are accustomed to it.

Costiveness is increased by keeping the body too warm, and by every thing that promotes the perspiration; as wearing flannel, lying too long in bed, &c. Intense thought and a sedentary life are likewise hurtful. All the secretions and excretions are promoted by moderate exercise without doors, and by a gay, cheerful, sprightly temper of mind.

The drink should be of an opening quality. All ardent spirits, austere and astringent wines, as port, and claret, ought to be avoided. Malt-liquor that is fine, and of a moderate strength, is very proper. Butter-milk, whey, and other watery liquors are proper and may be drank in turns, as the patient's inclination directs.

Those who are troubled with costiveness, ought, if possible, to remedy it by diet, as the constant use of medicines for that purpose is attended with many inconveniences, and often with bad consequences. I never knew any one get into a habit of taking medicine for keeping the body open, who could leave it off. In time the custom becomes necessary, and generally ends in a total

relaxation of the bowels, indigestion, loss of appetite, wasting of the strength, and death.

When the body cannot be kept open without medicine, we would recommend gentle doses of rhubarb to be taken twice or thrice a week. This is not near so injurious to the stomach as aloes, jalap, or the other drastic purgatives so much in use. Infusions of senna and manna may likewise be taken, or half an ounce of soluble tartar dissolved in water-gruel. About the size of a nutmeg of lenitive electuary taken twice or thrice a day generally answers the purpose very well. (See *Diseases of Child-bed Women*.)

WANT OF APPETITE.—ANOREXIA.

THIS may proceed from a foul stomach; indigestion; the want of free air and exercise; grief, fear, anxiety, or any of the depressing passions; excessive heat; the use of strong broths, fat meats, or any thing that palls the appetite, or is hard of digestion; the immoderate use of strong liquors, tea, tobacco, or opium.

The patient ought, if possible, to make choice of an open, dry air; to take exercise daily on horseback or in a carriage; to rise betimes; and to avoid all intense thought. He should use a diet of easy digestion; and should avoid excessive heat, and great fatigue.

If want of appetite proceed from errors in diet, or any other part of the patient's regimen, it ought to be changed. If nausea and retchings show that the stomach is loaded with crudities, a vomit will be of service. After this a gentle purge or two of rhubarb, or any of the bitter purging salts, may be taken. The patient ought next to use some of the stomachic bitters infused in wine. Though gentle evacuations be necessary, yet strong purges and vomits are to be avoided, as they weaken the stomach, and hurt digestion. After proper evacuations, bitter elixirs and tinctures with aromatics may be used.

Sulphuric acid is an excellent medicine in most cases of indigestion, weakness of the stomach, or want of appetite. From twenty to thirty drops of it may be taken twice or thrice a day in a glass of wine or water. It may likewise be mixed with the tincture of the bark, one drachm of the former to an ounce of the latter, and two tea-spoonfuls of it taken in wine and water, as above.

The chalybeate waters, if drank in moderation, are generally of considerable service in this case. The salt water has likewise good effects; but it must not be used too freely.

A want of appetite and loathing of food is not unusually an original affection, but prevails as a symptom of some other disease, such as indigestion, and is therefore to be obviated by the remedies mentioned under that head. In spontaneous anorexy or loss of appetite, where the stomach is loaded with bile, an emetic in the evening, with a purgative next morning, will seldom fail to effect a cure.—(See *Indigestion*.)

HEART-BURN.—CARDIALGIA.

WHAT is commonly called the *heart-burn* is not a disease of that organ, but an uneasy sensation of heat or acrimony about the pit of the stomach, which is sometimes attended with anxiety, nausea, and vomiting.

It may proceed from debility of the stomach, indigestion, bile, the abounding of an acid in the stomach, &c. Persons who are liable to this complaint ought to avoid stale liquors, acids, windy or greasy aliments, and should never use violent exercise soon after a plentiful meal. I know many persons who never fail to have the heart-burn if they ride soon after dinner, provided they have drank ale, wine, or any fermented liquor; but are never troubled with it when they have drank rum or brandy and water without any sugar or acid.

When the heart-burn proceeds from debility of the stomach, or indigestion, the patient ought to take a dose or two of rhubarb; afterwards he may use infusions of the Peruvian bark, or any other of the stomachic bitters, in wine or brandy. Drinking a cup of camomile tea, with fifteen or twenty drops of elixir of vitriol in it, twice or thrice a day, will strengthen the stomach, and promote digestion. Exercise in the open air will likewise be of use.

When bilious humors occasion the heart-burn, a tea-spoonful of the sweet spirits of nitre in a glass of water, or a cup of tea, will generally give ease. If it proceeds from the use of greasy aliments, a dram of brandy or rum may be taken.

If acidity or sourness of the stomach occasions the heart-burn, absorbents are the proper medicines. In this case an ounce of powdered chalk, half an ounce of fine sugar, and a quarter of an

ounce of gum arabic, may be mixed in a quart of water, and a tea-cupful of it taken as often as is necessary. But the safest and best absorbent is *magnesia alba*. This not only acts as an absorbent, but likewise as a purgative; whereas chalk, and other absorbents of that kind, are apt to lie in the intestines, and occasion obstructions. This powder is not disagreeable, and may be taken in a cup of tea, or a glass of mint water. A large tea-spoonful is the usual dose; but it may be taken in a much greater quantity when there is occasion. These things are now generally made up into lozenges for the convenience of being carried in the pocket and taken at pleasure.*

If wind be the cause of this complaint, the most proper medicines are those called carminatives, as aniseeds, juniper berries, ginger, canella alba, cardamom seeds, &c. These may either be chewed, or infused in wine, brandy or other spirits; but these ought never to be used, unless they are absolutely necessary, as they are only drams in a dry form, and very pernicious to the stomach. One of the safest medicines of this kind is the tincture made by infusing an ounce of rhubarb, and a quarter of an ounce of the lesser cardamom seeds, in a pint of brandy. After this has digested for two or three days, it ought to be strained, and four ounces of white sugar candy added to it. It must stand to digest a second time till the sugar be dissolved. A table-spoonful of it may be taken occasionally for a dose.

I have frequently known the heart-burn cured, particularly in pregnant women, by chewing green tea. Two table-spoonfuls of what is called the milk of gum ammoniac, taken once or twice a-day, will sometimes cure the heart-burn. (See *Diseases of Pregnancy*.)

As pregnant women are very subject to this uneasy sensation, they should first consider, whether it proceeds from any of the causes already explained; in which case the medicines prescribed under each head will probably remove it. But if the internal sense of heat be owing to the state of pregnancy itself; if it arises from the consent between the stomach and the womb, and is not accompanied with much spitting or any acid eructations, the white of an egg, mixed with a little sugar and water, will often afford the only relief that can be expected for some time.

* The heart-burn, if very troublesome, may be almost immediately removed by taking fifteen or twenty drops of the purified soap lees, the aqua kali puri of the shops, in a cup of linseed tea, or of milk.

NERVOUS DISEASES.—NEUROSES.

OF all diseases incident to mankind, those of the nervous kind are the most complicated and difficult to cure. A volume would not be sufficient to point out their various appearances. They imitate almost every disease; and are seldom alike in two different persons, or even the same person at different times. Proteus-like, they are continually changing shape : and upon every fresh attack, the patient thinks he feels symptoms which he never experienced before. Nor do they only affect the body; the mind likewise suffers, and is often thereby rendered extremely weak and peevish. The low spirits, timorousness, melancholy, and fickleness of temper, which generally attend nervous disorders, induce many to believe that they are entirely diseases of the mind; but this change of temper is rather a consequence, than the cause of nervous diseases.

Causes.—Every thing that tends to relax or weaken the body, disposes it to nervous diseases, as indolence, excessive venery, drinking too much tea, or other weak watery liquors warm, frequent bleeding, purging, and vomiting. Whatever impairs digestion, or prevents the proper assimilation of the food, has likewise this effect; as long fasting, excess in eating or drinking, the use of windy, crude, or unwholesome aliments, an unfavorable posture of the body, &c.

Nervous disorders often proceed from intense application to study. Indeed, few studious persons are entirely free from them. Nor is this at all to be wondered at; intense thinking not only preys upon the spirits, but prevents the person from taking proper exercise, by which means digestion is impaired, the nourishment prevented, the solids relaxed, and the whole mass of humors vitiated. Grief and disappointment likewise produce the same effects. I have known more nervous patients who dated the commencement of their disorders from the loss of a husband, a favorite child, or from some disappointment in life, than from any other cause. In a word, whatever weakens the body, or depresses the spirits, may occasion nervous disorders; as unwholesome air, want of sleep, great fatigue, disagreeable apprehensions, anxiety, and vexation.

Symptoms.—We shall only mention some of the most general symptoms of these disorders, as it would be both a useless and impracticable task to enumerate the whole. They generally begin

with windy inflations or distentions of the stomach and intestines; the appetite and digestion are usually bad; yet sometimes there is an uncommon craving for food, and a quick digestion. The food often turns sour on the stomach; and the patient is troubled with vomiting of clear water, tough phlegm, or a blackish-colored liquor resembling the grounds of coffee. Excruciating pains are often felt about the navel, attended with a rumbling or murmuring noise in the bowels. The body is sometimes loose, but more commonly bound, which occasions a retention of wind and great uneasiness.

The urine is sometimes in small quantity, and at other times very copious and quite clear. There is a great tightness of the breast, with difficulty of breathing; violent palpitation of the heart; and sudden flushings of heat in various parts of the body; at other times a sense of cold, as if water were poured on them; flying pains in the arms and limbs, and pains in the back and belly, resembling those occasioned by gravel: the pulse very variable, sometimes uncommonly slow, and at other times very quick; yawning, hiccough, frequent sighing, and a sense of suffocation, as if from a ball or lump in the throat; alternate fits of crying and convulsive laughing; the sleep is unsound, and seldom refreshing; and the patient is often troubled with the night-mare.

As the disease increases, the patient is molested with vertigo, syncope, head-ache, cramps, and fixed pains in various parts of the body; the eyes are clouded, and often affected with pain and dryness; there is a noise in the ears, and often a dulness of hearing; in short, the whole animal functions are impaired. The mind is disturbed on the most trivial occasions, and is hurried into the most perverse commotions, inquietudes, terror, sadness, anger, diffidence, &c. The patient is apt to entertain wild imaginations, and extravagant fancies; the memory becomes weak, and the judgment fails.

Nothing is more characteristic of this disease than a constant dread of death. This renders those unhappy persons who labor under it, peevish, fickle, impatient, and apt to run from one physician to another; which is one reason why they seldom reap any benefit from medicine, as they have not sufficient resolution to persist in any one course till it has time to produce its proper effects. They are likewise apt to imagine that they labor under diseases from which they are quite free: and are very angry if any one attempts to set them right, or laugh them out of their ridiculous notions.

Regimen.—Persons afflicted with nervous diseases ought never

to fast long: Their food should be solid and nourishing, but of easy digestion. Fat meats and heavy sauces are hurtful. All excess should be carefully avoided. They ought never to eat more at a time than they can easily digest; and heavy suppers are to be avoided. If they feel themselves weak and faint between meals, they ought to eat a bit of bread, and drink a glass of wine. Though wine in excess enfeebles the body, and impairs the faculties of the mind, yet taken in moderation, it strengthens the stomach, and promotes digestion. Every thing that is windy or hard of digestion must be avoided. All weak and warm liquors are hurtful; as tea, coffee, punch, &c. People may find temporary relief in the use of these, but they always increase the malady, as they weaken the stomach, and impair digestion. Above all things, drams are to be avoided. Whatever immediate ease the patient may feel from the use of ardent spirits, they are sure to aggravate the malady, and prove certain poisons at last. These cautions are the more necessary, as most nervous people are peculiarly fond of tea and ardent spirits; to the use of which many of them fall victims.

Exercise in nervous disorders is superior to all medicines. Riding on horseback is generally esteemed the best, as it gives motion to the whole body, without fatiguing it. I have known some patients, however, with whom walking agreed better, and others who were most benefited by riding in a carriage. Every one ought to use that which he finds most beneficial. Long sea-voyages have an excellent effect; and to those who have sufficient resolution, we would by all means recommend this course. Even change of place, and the sight of new objects, by diverting the mind, have a great tendency to remove these complaints. For this reason a long journey, or a voyage, is of much more advantage than riding short journeys near home.

A cool dry air is proper, as it braces and invigorates the whole body. Few things tend more to relax and enervate than hot air, especially that which is rendered so by great fires, or stoves in small apartments. But when the stomach or bowels are weak, the body ought to be well guarded against cold, especially in winter, by wearing a thin flannel waistcoat next the skin. This will keep up an equal perspiration, and defend the alimentary canal from many impressions to which it would otherwise be subject upon every sudden change from warm to cold weather. Rubbing the body frequently with a flesh-brush, or a coarse linen cloth, is likewise beneficial, as it promotes the circulation, and induces perspi-

ration. Persons who have weak nerves ought to rise early, and take exercise before breakfast, as lying too long a-bed cannot fail to relax the solids. They ought likewise to be kept as easy and cheerful as possible. There is not any thing which hurts the nervous system, or weakens the digestive powers, more than fear, grief, or anxiety.

Treatment.—Though nervous diseases are seldom radically cured, yet their symptoms may sometimes be alleviated, and the patient's life rendered at least more comfortable by proper medicines.

When the patient is costive, he ought to take a little rhubarb, or some other mild purgative, and should never suffer his body to be long bound. I have generally seen an infusion of senna and rhubarb in brandy answer very well. This may be made of any strength, and taken in such quantity as the patient finds necessary. When the digestion is bad, or the stomach relaxed and weak, the following infusion of Peruvian bark and other bitters may be used with advantage:—

Take of Peruvian bark an ounce, gentian-root, orange peel, and coriander-seed, of each half an ounce; let these ingredients be all bruised in a mortar, and infused in a bottle of brandy or rum, for the space of five or six days. A table-spoonful of the strained liquor may be taken in half a glass of water, an hour before breakfast, dinner, and supper.

Few things tend more to strengthen the nervous system than cold bathing. This practice, if duly persisted in, will produce very extraordinary effects; but when the liver or other *viscera* are obstructed, or otherwise unsound, the cold bath is improper. It is therefore to be used with very great caution. The most proper seasons for it are summer and autumn. It will be sufficient, especially for persons of a spare habit, to go into the cold bath three or four times a-week. If the patient be weakened by it, or feels chilly for a long time after coming out, it is improper.

In patients afflicted with wind, I have always observed the greatest benefit from the elixir of vitriol. It may be taken in the quantity of fifteen, twenty, or thirty drops, twice or thrice a-day, in a glass of water. This both expels wind, strengthens the stomach, and promotes digestion.

Opiates are generally extolled in these maladies; but as they only palliate the symptoms, and generally afterwards increase the disease, we would advise people to be extremely sparing in the

use of them, lest habit should render them at last absolutely necessary.*

It would be an easy matter to enumerate many medicines which have been extolled for relieving nervous disorders; but whoever wishes for a thorough cure, must expect it from regimen alone: we shall therefore omit mentioning more medicines, and again recommend the strictest attention to DIET, AIR, EXERCISE, and AMUSEMENTS.

MELANCHOLY.

MELANCHOLY is that state of alienation or weakness of mind which renders people incapable of enjoying the pleasures, or performing the duties of life. It is a degree of insanity, and often terminates in absolute madness.

Causes.—It may proceed from an hereditary disposition; intense thinking, especially where the mind is long occupied about one object; violent passions or affections of the mind, as love, fear, joy, grief, and pride. It may also be occasioned by excessive venery, narcotic or stupefactive poisons; a sedentary life; solitude; the suppression of customary evacuations; acute fevers; or other diseases. Violent anger will change melancholy into madness; and excessive cold, especially of the lower extremities, will force the blood into the brain, and produce all the symptoms of madness. It may likewise proceed from the use of aliment that is hard of digestion, or which cannot be easily assimilated. To all which we may add gloomy and mistaken notions of religion.

Symptoms.—When persons begin to be melancholy, they are dull; dejected; timorous; watchful; fond of solitude; fretful; fickle; captious and inquisitive; solicitous about trifles; sometimes niggardly, and at other times prodigal. The body is generally costive; the urine thin and in small quantity; the stomach and bowels inflated with wind; the complexion pale; and the pulse slow and weak. The functions of the mind are also greatly per-

* Few days have passed for a considerable time, that I have not had occasion to recommend the following tincture to some of my nervous patients, and I have seldom been disappointed with regard to its effects:—Take of compound tincture of the bark and volatile tincture of valerian each an ounce; mix them; take a tea-spoonful in a glass of wine or water three or four times a-day.

verted, insomuch that the patient often imagines himself dead, or changed into some other animal. Some have imagined their bodies were made of glass, or other brittle substances, and were afraid to move lest they should be broken to pieces. The unhappy patient, in this case, unless carefully watched, is apt to put an end to his life.

When the disease is owing to any obstruction of customary evacuations, or any bodily disorder, it is easier cured than when it proceeds from affections of the mind, or an hereditary taint. A discharge of blood from the nose, looseness, scabby eruptions, the bleeding piles, or the *menses*, sometimes carry off this disease.

Regimen.—The diet should consist chiefly of vegetables of a cooling and opening quality. Animal food, especially salted or smoke-dried fish or flesh, ought to be avoided. All kinds of shell-fish are bad. Aliments prepared with onions, garlic, or any thing that generates thick blood, are likewise improper. All kinds of fruits that are wholesome may be eaten with advantage. Boerhaave gives an instance of a patient who, by a long use of whey, water, and garden fruit, recovered, after having evacuated a great quantity of black colored matter.

Strong liquor of every kind ought to be avoided as poison. The most proper drink is water, whey, or very small beer. Tea and coffee are improper. If honey agrees with the patient, it may be eaten freely, or his drink may be sweetened with it. Infusions of balm-leaves, penny-royal, the roots of wild valerian, or the flowers of the lime-tree, may be drank freely, either by themselves, or sweetened with honey, as the patient shall choose.

The patient ought to take as much exercise in the open air as he can bear. Every kind of madness is attended with a diminished perspiration; all means ought therefore to be used to promote that necessary and salutary discharge. Nothing can have a more direct tendency to increase the disease, than confining the patient to a close apartment. Were he forced to ride or walk a certain number of miles every day, it would tend greatly to alleviate his disorder; but it would have a still better effect, if he were obliged to cultivate a piece of ground. By digging, hoeing, planting, sowing, &c. both the body and mind would be exercised. A long journey, or a voyage, especially towards a warmer climate, with agreeable companions, has often very happy effects. A plan of this kind, with strict attention to diet, is a much more rational method of cure, than confining the patient within doors, and plying him with medicines.

Treatment.—In the cure of this disease, particular attention must be paid to the mind. When the patient is in a low state his mind ought to be soothed and diverted with variety of amusements, as entertaining stories, music, &c. This seems to have been the method of curing melancholy among the Jews, as we learn from the story of King Saul: and, indeed, it is a very rational one. Nothing can remove diseases of the mind so effectually as applications to the mind itself, the most efficacious of which is music. The patient's company ought likewise to consist of such persons as are agreeable to him. People in this state are apt to conceive unaccountable aversions against particular persons; and the very sight of such persons is sufficient to distract their minds, and throw them into the utmost perturbation. In all kinds of madness, it is better to soothe and calm the mind, than to ruffle it by contradiction.

When the pulse is high, evacuations are necessary. In this case he must be bled, and have his body kept open by purging medicines, as manna, rhubarb, cream of tartar, or the soluble tartar. I have seen the last have very happy effects. It may be taken in the dose of half an ounce, dissolved in water gruel, every day for several weeks, or even for months, if necessary. More or less may be given according as it operates. Vomits have likewise a good effect; but they must be pretty strong, otherwise they will not operate.

Whatever increases the secretion of urine or promotes perspiration, has a tendency to remove this disease. Both these secretions may be promoted by the use of nitre and vinegar. Half a drachm of purified nitre may be given three or four times a-day in any manner that is most agreeable to the patient; and an ounce and a half of distilled vinegar may be daily mixed with his drink. Dr. Locker seems to think vinegar the best medicine that can be given in this disease.

Camphor and musk have likewise been used in this case with advantage. Ten or twelve grains of camphor may be rubbed in a mortar with half a drachm of nitre, and taken twice a-day, or oftener, if the stomach will bear it. If it will not sit upon the stomach in this form, it may be made into pills with assafoetida and castor, and taken in the quantity above directed. If musk is to be administered, a scruple or twenty-five grains of it may be made into a bolus with a little honey or common syrup, and taken twice or thrice a day. The antimonial wine is by some extolled for the cure of madness; it may be taken in a dose of forty or fifty drops

twice or thrice a-day in a cup of tea. We do not mean that all these medicines should be administered at once; but whichever of them is given, must be duly persisted in, and where one fails another may be tried.

As it is very difficult to induce patients in this disease to take medicines, we shall mention a few outward applications which sometimes do good; the principal of these are issues, setons, and warm bathing. Issues may be made in any part of the body, but they generally have the best effect near the spine. The discharge from these may be greatly promoted by dressing them with the mild blistering ointment, and keeping what are commonly called the orrice peas in them. The most proper place for a seton is between the shoulder blades; and it ought to be placed upwards and downwards, or in the direction of the spine.

Madness or delirium, which proceeds from mere weakness, requires a different treatment. This must be removed by nourishing diet, exercise proportioned to the patient's strength, and cordial medicines. All evacuations are carefully to be avoided. The patient may take frequently a glass of good wine, in which a little Peruvian bark has been infused.

PALSY.—PARALYSIS.

PALSY is a loss or diminution of sense or motion, or of both, in one or more parts of the body. Of all the affections called nervous, this is the most suddenly fatal. It is more or less dangerous, according to the importance of the part affected. A palsy of the heart, lungs, or any part necessary to life is mortal. When it affects the stomach, the intestines, or the bladder, it is highly dangerous. If the face be affected, the case is bad, as it shows that the disease proceeds from the brain. When the part affected feels cold, is insensible or wastes away, or when the judgment and memory begin to fail, there is small hope of a cure.

In some instances, the disease is confined to a particular part or set of muscles; but it more usually happens that one entire part of the body from the head downwards is affected, which is known by the name of *hemiplegia*. If the power of motion and sense of feeling in the half of the body, taken transversely, be impaired, the complaint is denominated *paraplegia*.

Causes.—The immediate cause of palsy is any thing that prevents the regular exertion of the nervous power upon any particular muscle or parts of the body. The occasional and predisposing causes are various, as drunkenness; wounds of the brain, or spinal marrow; pressure upon the brain, or nerves; very cold or damp air; the suppression of customary evacuations; sudden fear; want of exercise; or whatever greatly relaxes the system, as drinking much tea,* or coffee. Palsy may likewise proceed from wounds of the nerves themselves, and from the poisonous fumes of metals or minerals, as mercury, lead, or arsenic.

When palsy attacks any vital part, such as the brain, heart, or lungs, it soon terminates fatally. When it arises as a consequence of apoplexy, it generally proves very difficult of cure. Paralytic affections of the lower extremities, ensuing from any injury done to the spinal marrow, by blows and other accidents, usually prove incurable.

Treatment.—In young persons of a full habit, the palsy must be treated in the same manner as the sanguine apoplexy. The patient must be bled, blistered, and have his body opened by purgative medicines. But in old age, or when the disease proceeds from relaxation or debility, which is generally the case, a quite contrary course must be pursued. The diet must be warm and invigorating, seasoned with spicy and aromatic vegetables, as mustard, horse-radish, &c. The drink may be generous wine, mustard-whey, or brandy and water. Friction with the flesh brush, or a warm hand, is extremely proper, especially on the parts affected. Blistering plasters may likewise be applied to the affected parts with advantage. When this cannot be done, they may be rubbed with the volatile liniment.

Take Compound Camphor Liniment, one ounce.
 Oil of Turpentine, three drachms.

Make a liniment. Or,

Take Spirits of Camphor, one ounce.
 Tincture of Spanish Flies, two drachms.
 Solution of Subcarbonate of Ammonia, half an ounce.

One of the best external applications is electricity. The shocks

* Many people imagine, that tea has no tendency to hurt the nerves, and that drinking the same quantity of warm water would be equally pernicious. This, however, seems to be a mistake. Many persons drink three or four cups of warm milk and water daily, without feeling any bad consequences: yet the same quantity of tea will make their hands shake for twenty-four hours. That tea affects the nerves, is likewise evident from its preventing sleep, occasioning giddiness, dimness of sight, sickness, &c.

or other vibrations should be received on the part affected; and they ought daily to be repeated for several weeks.

As a gentle stimulus to the parts, urtication may sometimes be used. Warm bathing, electricity, and galvanism, are all attended, in many cases, with much benefit, and therefore ought not to be omitted.

When the disease affects several different parts of the body, as in hemiplegia and paraplegia, stimulants should be used both internally and externally. Those in most use are mustard seed, horse-radish, and the volatile alkaline salts or spirits, and ether.

Vomits are very beneficial in this kind of palsy, and ought frequently to be administered. Cephalic snuff, or any thing that makes the patient sneeze, is likewise of use. Some pretend to have found great benefit from rubbing the parts affected with nettles; but this does not seem to be preferable to blistering. If the tongue be affected, the patient may gargle his mouth frequently with brandy and mustard; or he may hold a bit of sugar in his mouth, wet with the compound spirits of lavender. The wild valerian root is a very proper medicine in this case. It may either be taken in an infusion with sage leaves, or half a drachm of it in powder may be given in a glass of wine three or four times a-day. A table-spoonful of mustard seed taken frequently is a very good medicine. The patient ought likewise to chew cinnamon, bark, ginger, or other warm spices.

Although in every instance a dangerous disease, palsy, particularly at an advanced period of life, is sometimes removed by the occurrence of a diarrhœa or fever. A feeling of warmth, and a slight pricking pain, as if stung by ants in the parts affected, with returning sensation and motion, are favorable symptoms.

Exercise is of the utmost importance in the palsy; but the patient must avoid cold, damp, and moist air. He ought to wear flannel next his skin; and, if possible, should remove into a warmer climate.

[The *rhus toxicodendron*, (poison-oak,) has been highly extolled as a remedy in paralytic affections. The powdered leaves may be used, commencing with half a grain, and gradually increasing it to four grains, three times daily. The effects of this article when given in large doses, are head-ache, vertigo, nausea, and sometimes profuse diarrhœa, and when these manifestations of its operation ensue, its use must be discontinued.—The oil of turpentine is strongly recommended by Dr. Prichard. He gives it in doses of from one to two drachms, three times daily, after depletory mea-

tures have been carried to a sufficient extent.—In paralysis of the tongue, a very moderate excitation of that organ by galvanism, has been attended with benefit. It may be done by two flat pieces of silver and copper, the one applied to the upper, and the other to the under surface—the parts projecting from the mouth being brought in frequent contact. (Eberle.) The nux vomica, and its preparation, strichnine, have been extensively used in paralysis, of late years, and with occasional benefit. But it is too dangerous a remedy to be used except under the direction of a physician.]

EPILEPSY, OR FALLING SICKNESS.

THE epilepsy is a sudden deprivation of all the senses wherein the patient falls suddenly down, and is affected with violent convulsive motions. Children, especially those who are delicately brought up, are most subject to it. It more frequently attacks men than women, and is very difficult to cure. When the epilepsy attacks children, there is reason to hope it may go off about the time of puberty. When it attacks any person after twenty years of age, the cure is difficult; but when after forty, a cure is hardly to be expected. If the fit continues only for a short space, and returns seldom, there is reason to hope; but if it continues long, and returns frequently, the prospect is bad. It is a very unfavorable symptom when the patient is seized with the fits in his sleep.

The returns of epilepsy are periodical, and its paroxysms commence more frequently in the night than in the day, being somewhat connected with sleep. It is one of those diseases that is frequently counterfeited by impostors to excite charity. It is occasionally combined with mania : and is properly distinguished into sympathetic and idiopathic; being considered as sympathetic when arising as an affection of some other parts of the body, as acidity in the stomach, worms, teething, &c. and idiopathic, when it is a primary disease,* neither dependent on, nor proceeding from any other.

Causes.—The epilepsy is sometimes hereditary. It may likewise proceed from blows, bruises, or wounds on the head; a col-

* We are informed by Dr. Parry, in his *Elements of Pathology and Therapeutics*, that whatever may be the primary cause of epilepsy, it usually depends immediately on excessive impetus of blood in the vessels of the brain.

lection of water, blood, or serous humors in the brain; a polypus; tumors or concretions within the skull; excessive drinking; intense study; excess of venery; worms; teething; suppression of customary evacuations; too great emptiness or repletion; violent passions or affections of the mind; and hysteric affections.

Symptoms.—An epileptic fit is generally preceded by unusual weariness; pain of the head, dullness, giddiness, noise in the ears, dimness of sight, palpitation of the heart, disturbed sleep, and difficult breathing; the bowels are inflated with wind, the urine is in great quantity, but thin; the complexion is pale, the extremities are cold, and the patient often feels, as it were, a stream of cold air ascending towards his head.

In the fit, the patient generally makes an unusual noise; his thumbs are drawn in towards the palms of his hands, his eyes are distorted, he starts, and foams at the mouth, his extremities are bent or twisted various ways, he often discharges urine, and fæces involuntarily, and is quite destitute of all sense and reason. After the fit is over, his senses gradually return, and he complains of a kind of stupor, weariness, and pain of his head; but has no remembrance of what happened to him during the fit.

This disease, from the difficulty of investigating its causes, and its strange symptoms, was formerly attributed to the wrath of the gods, or the agency of evil spirits. In modern times, it has often, by the vulgar, been imputed to witchcraft and fascination. It depends, however, as much upon natural causes as any other malady; and its cure may often be effected by persisting in the use of proper means.

Regimen.—Epileptic patients ought, if possible, to breathe a pure and free air. Their diet should be light, but nourishing. They ought to drink nothing strong, to avoid swine's flesh, water-fowl, and likewise all windy and oily vegetables, as cabbage, nuts, &c. They ought to keep themselves cheerful, carefully guarding against all violent passions. Exercise is likewise of great use; but the patient must be careful to avoid all extremes either of heat or cold, and all dangerous situations, as standing upon precipices, riding, crossing deep waters, and the like.

Treatment.—The intentions of cure must vary according to the cause of the disease. If the patient be of a sanguine temperament, and there be reason to fear an obstruction in the brain, bleeding and other evacuations will be necessary. When the disease is occasioned by the stoppage of customary evacuations, these, if possible, must be restored; if this cannot be done, others may be

substituted in their place. Issues or setons in this case have often a very good effect. When there is reason to believe that it proceeds from worms, proper medicines must be used to kill, or carry off these vermin. When it proceeds from teething, the body should be kept open by emollient clysters, the feet be frequently bathed in warm water, and, if the fits prove obstinate, a blistering-plaster may be put between the shoulders. The same method is to be followed, when epileptic fits precede the eruption of the small-pox or measles.

When the disease is hereditary, or proceeds from a wrong formation of the brain, a cure is not to be expected. When it is owing to debility, or too great irritability of the nervous system, such medicines as tend to brace and strengthen the nerves may be used, as the Peruvian bark, and steel.

As a tonic, the cinchona bark has been much employed in the cure of this disease. It is best, however, adapted to those epilepsies which recur at certain periods, and which are without plethora; in which cases, if given in a considerable quantity before the expected recurrence of the fit, it will most likely prove serviceable; and when taken for any length of time, it may be combined with valerian, gentian, &c.

Take	Decoction of Bark, ten drachms.
	Tincture of Bark, two drachms.
	Tincture of Ammoniated Valerian, half a drachm.

Mix for a draught, to be taken three times a-day.

Metallic tonics have been found more powerful than the vegetable ones, and are therefore more generally employed. Among these the oxyde of zinc has of late been highly extolled for the cure of epilepsy. Though this medicine will not be found to answer the expectations which have been raised concerning it, yet in obstinate epileptic cases it deserves a trial. The dose is from one to three or four grains, which may be taken either in pills or a bolus, as the patient inclines. The best method is to begin with a single grain four or five times a-day, and gradually to increase the dose as far as the patient can bear it. I have often known this medicine, when duly persisted in, prove beneficial. Sulphate and carbonate of iron; the ammoniated iron; and ammoniated copper, have all been employed with occasional benefit in this affection. Their use should be commenced with small doses, increasing them gradually to as much as the stomach will bear. The powder and other preparations of tin, have all been used in the cure of epilepsy, but their effects appear rather doubtful.

Musk has sometimes been found to succeed in epilepsy; ten or twelve grains of it, with the same quantity of factitious cinna-bar, may be made up into a bolus, and taken every night and morning.

The nitrate of silver, in the cure of epilepsy, has been found to be a valuable medicine, even where the disease has been of many years' standing, and had resisted the powers of others. It is advised to begin with a quarter of a grain three times a-day, (for an adult) gradually increasing it afterwards to one grain, or one and a half, in the form of a pill. The oil of turpentine has been used in some cases of epilepsy with manifest success, as well as in other spasmodic diseases. The dose should be considerable to produce any effect, e. g. an ounce for a delicate female; an ounce and a half for a robust female, or small man; and about two ounces for a robust man. It is best exhibited in milk; and the fittest time for taking it will be early in the morning, upon an empty stomach. In some of the worst cases of epilepsy, in which the fits were long and violent; as well as frequent throughout the course of the day, and where the disease has been of long standing, electricity has been found to render them weaker, and to reduce their number very materially in a short space of time. When other means fail to produce the desired effect, galvanism may be tried.

Convulsion fits proceed from the same causes, and must be treated in the same manner as the epilepsy.

ST. VITUS'S DANCE.—CHOREA.

The disease termed Chorea, or St. Vitus's Dance, generally attacks young people from the eighth year of their age till the time of puberty; though it has been sometimes found to occur at a more advanced period of life. Females are more liable to it than males. The first symptom of this disease is generally a slight lameness of one leg, which the patient drags a little, and seems to have lost the power of duly regulating its action. The arms next become affected, and are thrown into various contortions, which deprive persons affected with this disease of the power of feeding themselves, and their awkward gesticulations in attempting to bring articles of food towards their mouth appear ridiculous. One side of the body is in general more affected than the other. The

tongue participates of the general disease of the system, so as to render articulation nearly unintelligible. If the disease continue long, it materially injures the constitution, sleep becomes disturbed or is in a great measure prevented, the mental faculties are impaired, and revert to childishness; pain is often felt in the stomach, the appetite for food is extremely irregular, being occasionally ravenous; the countenance appears pale and languid, and the body and limbs are much emaciated.

The feebleness and debility caused by this disease, seem to have influenced the routine of practice pursued in the treatment of it. The remedies generally recommended are accordingly of the tonic class, such as Peruvian-bark, steel, bitters, preparations of zinc and copper, cold bathing, and electricity. Notwithstanding the administration of these remedies, chorea has generally proved a tedious and untractable disease, continuing to harass the patient for months and even years, not unfrequently occasioning permanent injury to the faculties of the mind as well as the powers of the body.

Dr. JAMES HAMILTON of Edinburgh in his late valuable publication on "The utility and administration of purgative medicines," has promulgated so just a view of the nature and origin of the complaint now under consideration, accompanied with a mode of cure so judicious and successful, that it becomes a duty to diffuse a knowledge of his opinions and practice as extensively as possible.

Respecting the plan of treating this disease which has hitherto prevailed, the Doctor observes, "It is melancholy to reflect that months and years, the most valuable in respect of after-life, should glide on, while an effectual check is given to the improvement of the mind, the cultivation of useful learning, or the acquisition of necessary arts; with the hazard of permanent fatuity, to a certain extent, or of a grotesque appearance, from the unconquerable remains of irregular motions being imposed on the young sufferers for life. To these certain consequences of protracted chorea, I will add, the danger that attends it; I have no doubt, but it must have, on some occasions, proved fatal."

The remedies which that enlightened practitioner has found eminently successful in the cure of this disease, consist of active purgatives. From three to five grains of calomel combined with ten or fifteen of jalap; or a sufficient quantity of the aloetic pill, occasionally interposing a proper dose of the tartarized infusion of senna, are so administered as to produce full purging daily, which

is to be kept up till the progress of the disease is found to be arrested.

The emaciation and apparent debility of the subjects of this disease, and the unfounded alarms of their friends lest these symptoms should be increased by evacuations, are apt to shake the resolution of the practitioner, and prevent him from following out this practice to a due extent. But the diminution of the involuntary motions, the general appearance of returning health visible in the countenance, and the regularity of the appetite for food, are the circumstances that should regulate his conduct; and their presence ought to encourage him to proceed notwithstanding the weakness of the patient. The quantity of fæces discharged during the administration of these medicines is sometimes so enormous as to exceed belief; and this circumstance affords grounds to suppose, either that their retention, or the torpor and inactivity of the bowels, is a chief source of this complaint. The evacuations from the bowels ought to be daily and attentively inspected, and the return of their natural appearance and quantity will be found to indicate and keep pace with the renovation of health.

Dr. H. adds, "Since I have employed purgatives in chorea, I have been disappointed in effecting a cure in one case only." To this statement I can add, my testimony of the complete success of this mode of treatment in three instances in which I have made trial of it.

When the complaint is subdued, the complete restoration of health and vigor is best effected by the use of a light and nutritious diet, with a moderate quantity of wine, due exercise in the open air, and bathing in the sea if convenient. A powder composed of five grains of the rust of iron, together with ten of rhubarb, and an equal quantity of fine sugar, may also be taken every morning for some weeks with advantage.

[After proper depletion, by purgatives, in this disease, the oil of amber has been used with decided benefit. It should be given in doses of ten drops, three times daily. Frictions with the oil should also be made along the whole course of the spine, several times a-day.]

Some people, particularly pregnant women, are very subject to spasmodic contractions of the joints, coming on periodically, and attended with very violent pain; for the removal of these, anodyne frictions appear to be the best remedy.

THE HICCOUGH.

THE hiccough is a spasmodic or convulsive affection of the stomach and midriff, arising from any cause that irritates their nervous fibres.

It may proceed from excess in eating or drinking; from a hurt in the stomach; poisons; wind; inflammation or scirrhus tumors of the stomach, intestines, bladder, midriff, or the rest of the viscera. In gangrene, and acute and malignant fevers, a hiccough is often the forerunner of death.

When the hiccough proceeds from the use of aliment that is flatulent or hard of digestion, a draught of generous wine, or of any spirituous liquor will generally remove it. If poison be the cause, plenty of oil and milk must be drank, as has been formerly recommended. When it proceeds from an inflammation of the stomach, &c. it is very dangerous. In this case the cooling regimen ought to be strictly observed. The patient must be bled, and take frequently a few drops of the sweet spirits of nitre in a cup of wine whey. His stomach should likewise be fomented with cloths dipped in warm water, or have bladders filled with warm milk and water applied to it.

When the hiccough proceeds from gangrene or mortification, the Peruvian bark, with other antiseptics, are the only medicines which have a chance to succeed. When it is a primary disease, and proceeds from a foul stomach, loaded either with pituitous or bilious matter, a gentle vomit and purge, if the patient be able to bear them, will be of service. If it arises from flatulency, the carminative medicines directed for the heart-burn must be used.

When the hiccough proves very obstinate, recourse must be had to the most powerful aromatic and antispasmodic medicines; the principal of these is musk; fifteen or twenty grains of which may be made into a bolus, and repeated occasionally. Opiates are likewise of service; but they must be used with caution. A bit of sugar dipped in compound spirits of lavender, or the volatile aromatic tincture, may be taken frequently. External applications are sometimes also beneficial; as the stomach plaster, or a cataplasm of the Venice turpentine, applied to the region of the stomach.

I lately attended a patient who had almost a constant hiccough for above nine weeks. It was frequently stopped by the use of musk, opium, wine, and other cordial and antispasmodic medicines,

but always returned. Nothing, however, gave the patient so much ease as brisk small beer. By drinking freely of this the hiccough was often kept off for several days, which was more than could be done by the most powerful medicines. The patient was at length seized with a vomiting of blood, which soon put an end to his life. Upon opening the body a large scirrhus tumor was found near the pylorus, or right orifice of the stomach.

The hiccough may be removed by taking vinegar; or by a few drops of sulphuric acid taken in water.*

CRAMP OF THE STOMACH.

THIS disease often seizes people suddenly, is very dangerous, and requires immediate assistance. It is most incident to persons in the decline of life, especially the nervous, gouty, hysteric, and hypochondriac.

If the patient has any inclination to vomit he ought to take draughts of warm water, or weak camomile tea, to cleanse his stomach. After this, a laxative clyster may be given. He ought then to take laudanum. The best way of administering it is in a clyster. Sixty or seventy drops of liquid laudanum may be given in a clyster of warm water. This is much more certain than laudanum given by the mouth, which is often vomited, and in some cases increases the pain and spasms in the stomach.

If the pain and cramps return with great violence, after the effects of the anodyne clyster are over, another with an equal or larger quantity of opium, may be given; and every four or five hours a bolus, with ten or twelve grains of musk, and half a drachm of the Venice turpentine. In the mean time the stomach ought to be fomented with cloths dipped in warm water, or bladders filled with warm milk and water should be constantly applied to it. I have often seen these produce the most happy effects.

[In violent cases, a mixture of equal parts of laudanum and ether should be exhibited, in doses of a tea-spoonful, every twenty minutes, until relief is obtained. The use of this mixture, however should be preceded by the administration of a large dose of

* I have frequently seen a very troublesome hiccough put a stop to by swallowing quickly a glass of the strong soda water in a state of brisk effervescence.—The common hiccough may in general be removed by taking a pinch of snuff, or any thing that will cause sneezing.

castor oil and turpentine. The warm bath is also an admirable remedy in such cases, and should be resorted to as soon as possible after the commencement of the attack. Copious draughts of cold water, have been known to relieve cramp of the stomach in a very few minutes. Cold injections have also been used with the most perfect success. After the more violent symptoms have been relieved, purgatives should be regularly administered for several days, or until the secretions from the liver and bowels become natural and healthy.]

In very violent and lasting pains of the stomach, blood ought to be let, unless the weakness of the patient forbids it. When the pain or cramps proceed from suppression of the *menses*, bleeding is of use. If they be owing to the gout, recourse must be had to spirits or some of the warm cordial waters. Blistering plasters ought likewise, in this case, to be applied to the ankles. I have often seen violent cramps and pains of the stomach removed by covering it with a large plaster of treacle of the London Dispensatory.

SARDONIC LAUGH.—RISUS SARDONICUS.

THIS disease is principally characterized by a fit of laughter, arising without any evident cause, and often continuing in a violent degree for three or four nights, so far as to prevent the patient from sleeping. By its duration in this way great debility is produced, accompanied with frequency of the pulse, and other febrile symptoms; at which time it either proves fatal by its violence, or ceases spontaneously.

For the removal of this disease, opium in large doses, musk, castor, assafœtida, camphor, ether, and other antispasmodics have usually been employed without effect; so that, indeed, we are hitherto unacquainted with any remedy that will prove effectual; the spontaneous cessation, therefore, of the fit is more to be trusted to than assistance from medicine.

NIGHT-MARE.—INCUBUS.

IN this disease the patient, in time of sleep, imagines he feels an uncommon oppression of weight about his breast or stomach, which he can by no means shake off. He groans, and sometimes cries out, though oftener he attempts to speak in vain. Sometimes he imagines himself engaged with an enemy, and in danger of being killed, attempts to run away, but finds he cannot. Sometimes he fancies himself in a house that is on fire, or that he is in danger of being drowned in a river. He often thinks he is falling over a precipice, and the dread of being dashed to pieces suddenly awakes him.

This disorder has been supposed to proceed from too much blood; from a stagnation of blood in the brain, lungs, &c. But it is rather a nervous affection, and arises chiefly from indigestion. Hence we find that persons of weak nerves, who lead a sedentary life, and live full, are most commonly afflicted with the night-mare. Nothing tends more to produce it than heavy suppers, especially when eaten late, or the patient goes to bed soon after. Wind is likewise a very frequent cause of this disease; for which reason, those who are afflicted with it ought to avoid all flatulent food. Deep thought, anxiety, or any thing that oppresses the mind ought also to be avoided. Sailors are very liable to this disease; hypochondriacs and pregnant women are also its victims, but males more frequently than females.

The night-mare is frequently occasioned by eating a full meal of animal food, and drinking freely of fermented liquor, after long fasting and bodily fatigue, by which the whole system is debilitated, and the digestive faculties consequently impaired. When in this state, the safest thing a person can take is tea with bread and butter, which will be found to alleviate fatigue much more completely than wine.

As persons afflicted with the night-mare generally moan, or make some noise in the fit, they should be waked, or spoken to by such as hear them, as the uneasiness generally goes off as soon as the patient is awake.

When the night-mare goes off, as frequently is the case, without the patient awaking, strange aberrations of mind are occasionally produced, which give origin to reputed visions and supernatural visitations, even among people of superior intellectual cultivation.

The degree of consciousness, during a paroxysm of night-mare, is so much greater than ever happens in a dream, that the person who has had a vision of this kind cannot easily bring himself to acknowledge the deceit unless he awakes, or is aroused from his paroxysm, and discovers some incongruity in respect to time or place, which proves the transition to be an illusion.

Persons who are young, or full of blood, if troubled with the night-mare, ought to take a purge frequently, use a spare diet, and exercise in the open air. The carbonate of soda, mixed with ale or porter, form an agreeable beverage for those liable to dyspeptic symptoms and incubus.

SWOONING.—SYNCOPE.

PEOPLE of weak nerves, or delicate constitutions are liable to swoonings or fainting fits. These, indeed, are seldom dangerous, when duly attended to; but when wholly neglected, or improperly treated, they often prove hurtful, and sometimes fatal.

The general causes of swoonings are, sudden transitions from cold to heat; breathing air that is deprived of its proper spring or elasticity; great fatigue; excessive weakness; loss of blood; long fasting; fear, grief, and other violent passions or affections of the mind.

It is well known, that persons who have been long exposed to cold often faint, or fall into a swoon, upon coming into the house, especially if they drink hot liquor, or sit near a large fire. This might easily be prevented by people taking care not to go into a warm room immediately after they have been exposed to the cold air, to approach the fire gradually, and not to eat or drink any thing hot, till the body has been gradually brought into a warm temperament.

When any one, in consequence of neglecting these precautions, falls into a swoon, he ought immediately to be removed to a cooler apartment, to have ligatures applied above his knees and elbows, and to have his hands and face sprinkled with vinegar or cold water. He should likewise be made to smell to vinegar, and should have a spoonful or two of water, if he can swallow, with about a third part of vinegar mixed with it, poured into his mouth. If these

should not remove the complaint, it may be necessary to bleed the patient, and afterwards to give him a clyster.

As air that is breathed frequently loses its elasticity or spring, it is no wonder if persons who respire in it often fall into a swoon or fainting-fit. They are in this case deprived of the very principle of life. Hence it is that fainting fits are so frequent in all crowded assemblies, especially in hot seasons. Such fits, however, must be considered as a kind of temporary death; and, to the weak and delicate, they sometimes prove fatal. They ought therefore with the utmost care to be guarded against. The method of doing this is obvious. Let assembly-rooms, and all other places of public resort, be large and well ventilated; and let the weak and delicate avoid such places, particularly in warm seasons.

A person who faints in such a situation ought immediately to be carried into the open air; his temples should be rubbed with strong vinegar or brandy, and volatile spirits or salts held to his nose. He should be laid upon his back with his head low, and have a little wine, or some other cordial, as soon as he is able to swallow it, poured into his mouth. If the person has been subject to hysteric fits, castor oil or assafoetida should be applied to the nose, or burnt feathers, horn, or leather.

When fainting-fits proceed from mere weakness or exhaustion, which is often the case after great fatigue, long fasting, loss of blood, or the like, the patient must be supported with generous cordials, as jellies, wine, spirituous liquors, and such like. These, however, must be given at first in very small quantities, and increased gradually as the patient is able to bear them. He ought to be allowed to lie quite still and easy upon his back, with his head low, and should have fresh air admitted into his chamber. His food should consist of nourishing broths, sago-gruel with wine, new milk, and other things of a light and cordial nature. These things are to be given out of the fit. All that can be done in the fit is, to let him smell to a bottle of Hungary-water, *eau-de-luce*, or spirits of hartshorn, and to rub his temples with warm brandy, or to lay a compress dipped in it to the pit of the stomach.

In fainting-fits that proceed from fear, grief, or other violent passions or affections of the mind, the patient must be very cautiously managed. He should be suffered to remain at rest, and only made to smell to some vinegar. After he is come to himself, he may drink freely of warm lemonade, or balm-tea, with some orange or lemon peel in it. It will likewise be proper, if the faint-

ing fits have been long and severe, to cleanse the bowels by throwing in an emollient clyster.

It is common in fainting fits, from whatever cause they proceed, to bleed the patient. This practice may be very proper in strong persons of a full habit; but in those who are weak and delicate, or subject to nervous disorders, it is dangerous. The proper method with such people is, to expose them to the free air, and to use cordial and stimulating medicines, as volatile salts, Hungary-water, spirits of lavender, tincture of castor, and the like.

FLATULENCIES, OR WIND.

ALL nervous patients, without exception, are afflicted with wind and flatulencies in the stomach and bowels, which arise chiefly from the want of tone or vigor in these organs. Crude flatulent aliment, as green peas, beans, colewort, and cabbage, may increase this complaint; but strong and healthy people are seldom troubled with wind, unless they either overload their stomachs, or drink liquors that are in a fermenting state, and consequently full of elastic air. While therefore the matter of flatulence proceeds from our aliments, the cause which makes air separate from them in such quantity as to occasion complaints, is almost always a fault of the bowels themselves, which are too weak either to prevent the production of elastic air, or to expel it after it is produced.

To relieve this complaint, such medicines ought to be used as have a tendency to expel wind, and by strengthening the alimentary canal, to prevent its being produced there.*

The list of medicines for expelling wind is very numerous; they often, however, disappoint the expectations of both the physician and his patient. The most celebrated among the class of carminatives are juniper-berries; the roots of ginger and zedoary; the seeds of anise, caraway, and coriander; gum assafœtida and opium; the warm waters, tinctures, and spirits, as the aromatic water, the tincture of woodsoot, the volatile aromatic spirit, æther, &c.

Dr. Whyte says, he found no medicine more efficacious in expel-

* Many nervous people find great benefit from eating a dry biscuit, especially when the stomach is empty. I look upon this as one of the best carminative medicines; and would recommend it in all complaints of the stomach, arising from flatulence, indigestion, &c.

ling wind than æther and laudanum. He generally gave the laudanum in a mixture with peppermint-water and tincture of castor, or sweet spirits of nitre. Sometimes, in place of this, he gave opium in pills with assafœtida. He observes that the good effects of opiates are equally conspicuous, whether the flatulence be contained in the stomach or intestines; whereas those warm medicines, commonly called *carminatives*, do not often give immediate relief, except when the wind is in the stomach.

With regard to æther, the Doctor says, he has often seen very good effects from it in flatulent complaints, where other medicines failed. The dose is a tea-spoonful mixed with two table-spoonfuls of water.* In gouty cases, he observes that æther, a glass of French brandy, or of the aromatic water, or ginger, either taken in substance or infused in boiling water, are among the best medicines for expelling wind.

When the case of flatulent patients is such as makes it improper to give them warm medicines inwardly, he recommends external applications, which are sometimes of advantage. Equal parts of the anti-hysterical and stomach-plaster may be spread upon a piece of soft leather, of such size as to cover the greater part of the belly. This should be kept on for a considerable time, provided the patient be able to bear it; if it should give great uneasiness, it may be taken off, and the following liniment used in its stead:—

Take of Bate's anodyne balsam an ounce; of the expressed oil of mace half an ounce; oil of mint two drachms. Let these ingredients be mixed together, and about a table-spoonful well rubbed on the parts at bed-time.

For strengthening the stomach and bowels, and consequently for lessening the production of flatulence, he recommends the Peruvian bark, bitters, chalybeates, and exercise. In flatulent cases, he thinks some nutmeg or ginger should be added to the tincture of the bark and bitters, and that the aromatic powder should be joined with the filings of iron.

When windy complaints are attended with costiveness, which is often the case, few things will be found to answer better than four or five of the following pills taken every night at bedtime:—

Take of assafœtida two drachms; soccotrine aloes, salt of iron, and powdered ginger, of each one drachm; and as much gum Arabic as will be sufficient to form them into pills.

* Though the patient may begin with this quantity, it will be necessary to increase the dose gradually as the stomach can bear it. Æther is now given in considerable greater doses than it was in Dr. Whyte's time.

On the other hand, when the body is too open, twelve or fifteen grains of rhubarb, with half a drachm, or two scruples of the Japonic confection, given every other evening, will have very good effect.

In those flatulent complaints which come on about the time the *menses* cease, repeated small bleedings often give more relief than any other remedy.

With regard to diet, the Doctor observes, that tea, and likewise all flatulent aliments, are to be avoided; and that for drink, water with a little brandy or rum is not only preferable to malt liquor, but in most cases also to wine.

As Dr. Whyte has paid great attention to this subject, and as his sentiments upon it in a great measure agree with mine, I have taken the liberty to adopt them; and shall only add to his observations, that exercise is in my opinion superior to all medicines, both for preventing the production, and likewise for expelling of flatulencies. These effects, however, are not to be expected from sauntering about, or lolling in a carriage; but from labor, or such active amusements as give exercise to every part of the body.

LOW SPIRITS.—HYPOCHONDRIASIS.

THIS disease, known also by the name OF THE VAPORS, is a certain state of the mind, accompanied with dyspepsia, in which the greatest evils are apprehended upon the slightest grounds, and the worst consequences imagined from any unusual feeling even of a trifling kind; and as regards these apprehensions and feelings, there is always the most obstinate belief and persuasion.

All who have weak nerves are subject to low spirits in a greater or less degree. Generous diet, the cold bath, exercise, and amusements, are the most likely means to remove this complaint. It is greatly increased by solitude and indulging gloomy ideas, but may often be relieved by cheerful company and sprightly amusements.

When low spirits are owing to a weak relaxed state of the stomach and bowels, an infusion of the Peruvian bark with cinnamon or nutmeg will be proper. Steel joined with aromatics may likewise in this case be used with advantage; but riding, and a proper diet, are most to be depended on.—When they arise from foulness of the stomach and intestines, or obstructions in the hy-

pochondriac viscera, aloetic purges will be proper. When the disease proceeds from a suppression of the menstrual or of the hæmorrhoidal flux, these evacuations may either be restored, or some other substituted in their place, as issues, or setons. Dr. Whyte observes, that nothing has such sudden good effects in this case as bleeding.—When it has been brought on by long-continued grief, anxiety, or other distress of mind, agreeable company, variety of amusements, and change of place, especially travelling into foreign countries, will afford the most certain relief.

Persons afflicted with low spirits should avoid all kinds of excess, especially of strong liquors. The moderate use of wine and other strong liquors is by no means hurtful: but when taken to excess, they weaken the stomach, vitiate the humors, and depress the spirits. This caution is the more necessary, as the unfortunate and melancholy often fly to strong liquors for relief, by which means they never fail to precipitate their own destruction.

Besides the usual symptoms attendant on this disease, hypochondriacs are apt to be troubled with pain in the head and stomach; to relieve which it may be proper to give such medicines as æther, musk, and opium, either separately or conjointly.

HYSTERIC AFFECTIONS.

THESE likewise belong to the numerous tribe of nervous diseases, which may justly be reckoned the reproach of medicine. Women of a delicate habit, whose stomach and intestines are relaxed, and whose nervous system is extremely sensible, are most subject to hysteric complaints. In such persons an hysteric fit, as it is called, may be brought on by an irritation of the nerves of the stomach or intestines, by wind, acrid humor, or the like. A sudden suppression of the *menses* often gives rise to hysteric fits. They may likewise be excited by violent passions or affections of the mind, as fear, grief, anger, or great disappointments.—It appears under such various shapes, imitates so many other diseases, and is attended with such a variety of symptoms, that it is difficult to give a just character or definition of it; and it is only by taking the aggregate of its appearances that a proper idea can be conveyed of it to others.

Sometimes the hysteric fit resembles a swoon or fainting fit, during which the patient lies as in a sleep, only the breathing is

so low as scarcely to be perceived. At other times the patient is affected with catchings and strong convulsions. The symptoms which precede hysteric fits are likewise various in different persons. Sometimes the fits come on with coldness of the extremities, yawning and stretching, lowness of spirits, oppression and anxiety. At other times the approach of the fit is foretold by a feeling, as if there were a ball at the lower part of the abdomen, which gradually rises towards the stomach, where it occasions inflation, sickness, and sometimes vomiting; afterwards it rises into the throat, and occasions a degree of suffocation, to which quick breathing, palpitation of the heart, giddiness of the head, dimness of the sight, loss of hearing, with convulsive motions of the extremities and other parts of the body, succeed. The hysteric paroxysm is often introduced by an immoderate fit of laughter, and sometimes it goes off by crying. Indeed there is not much difference between the laughing and crying of an hysteric lady.

Our aim in the treatment of this disease must be to shorten the fit or paroxysm when present, and to prevent its return. The longer fits continue, and the more frequently they return, the disease becomes the more obstinate. Their strength is increased by habit, and they induce so great a relaxation of the system, that it is with difficulty removed.

It is customary, during the hysteric fit or paroxysm, to bleed the patient. In strong persons of a plethoric habit, and where the pulse is full, this may be proper; but in weak and delicate constitutions, or where the disease has been of long standing, or arises from inanition, it is not safe. The best course in such cases is to rouse the patient by strong smells, as burnt feathers, asafœtida, or spirits of hartshorn, held to the nose. Hot bricks may also be applied to the soles of the feet, and the legs, arms, and abdomen, may be strongly rubbed with a warm cloth. But the best application is to put the feet and legs into warm water. This is peculiarly proper when the fits precede the flow of the *menses*. In case of costiveness, a laxative clyster with asafœtida will be proper: and as soon as the patient can swallow, two table-spoonfuls of a solution of asafœtida, or of some cordial julep, may be given frequently.*

* When hysteric fits are occasioned by sympathy, they may be cured by exciting an opposite passion. This is said to have been the case of a whole school of young ladies in Holland, who were all cured by being told, that the first who was seized should be burned to death. But this method of cure, to my knowledge, will not always succeed. I would therefore advise, that young ladies who are subject to hysteric fits should not be sent to

The radical cure of this disorder will be best attempted at a time when the patient is most free from the fits. It will be greatly promoted by a proper attention to diet. A milk and vegetable diet, when duly persisted in, will often perform a cure. If, however, the patient has been accustomed to a more generous diet, it will not be safe to leave it off all at once, but by degrees. The most proper drink is water with a small quantity of spirits. A cool dry air is the best. Cold bathing, and every thing that braces the nerves, and invigorates the system, is beneficial; but lying too long in bed, or whatever relaxes the body, is hurtful. It is of the greatest importance to have the mind kept constantly easy and cheerful, and, if possible, to have it always engaged in some agreeable and interesting pursuit.

The proper medicines are those which strengthen the alimentary canal and the whole nervous system, as the preparations of iron, the Peruvian bark and other bitters. Twenty drops of the elixir of vitriol, in a cup of the infusion of the bark, may be taken twice or thrice a-day. The bark and iron may likewise be taken in substance, provided the stomach can bear them; but they are generally given in too small doses to have any effect. The chalybeate waters generally prove beneficial in this disorder.

If the stomach is loaded with phlegm, vomits will be of use; but they should not be too strong, nor frequently repeated, as they tend to relax and weaken the stomach. If there is a tendency to costiveness, it must be removed either by diet, or by taking an opening pill as often as it shall be found necessary.

To lessen the irritability of the system, antispasmodic medicines will be of use. The best antispasmodic medicines are musk, opium, and castor. When opium disagrees with the stomach, it may either be applied externally, or given in clysters. It is often successful in removing those periodical head-aches to which hysteric and hypochondriac patients are subject. Castor has in some cases been found to procure sleep where opium failed; for which reason Dr. Whyte advises, that they should be joined together. He likewise recommends the anti-hysteric plaster to be applied to the *abdomen*.*

Hysteric women are often afflicted with cramps in various parts

boarding-schools, as the disease may be caught by imitation. I have known madness itself brought on by sympathy.

* Though antispasmodics and anodynes are universally recommended in this disease, yet all the extraordinary cures that I ever knew in hysteric cases, were performed by means of tonic and corroborating medicines.

of the body, which are most apt to seize them in bed, or when asleep. The most efficacious medicines in this case are opium, blistering-plasters, and warm bathing or fomentations. When the cramp or spasm is very violent, opium is the remedy most to be depended on. In milder cases, immersing the feet and legs in warm water, or applying a blistering-plaster to the part affected, will often be sufficient to remove the complaint. In patients whose nerves are uncommonly delicate and sensible, it will be better to omit the blistering-plaster, and to attempt the cure by opiates, musk, camphor, and the warm bath.

Cramps are often prevented or cured by compression. Thus cramps in the legs are prevented, and sometimes removed, by tight bandages; and when convulsions arise from a flatulent distention of the intestines, or from spasms beginning in them, they may be often lessened or cured by making a pretty strong compression upon the *abdomen* by means of a broad belt. When spasms or convulsive motions arise from sharp humors in the stomach or intestines, no lasting relief can be procured till these are either corrected or expelled. The Peruvian bark has sometimes cured periodic convulsions after other medicines had failed.

HYPOCHONDRIAC AFFECTIONS.

THIS disease generally attacks the indolent, the luxurious, the unfortunate and the studious. It becomes daily more common in this country, owing, no doubt, to the increase of luxury and sedentary employments. It has so near a resemblance to the immediately preceding, that many authors consider them as the same disease, and treat them accordingly. They require, however, a very different regimen; and the symptoms of the latter, though less violent, are more permanent than those of the former.

Men of melancholy temperament, whose minds are capable of great attention, and whose passions are not easily moved, are, in the advanced periods of life, most liable to this disease. It is usually brought on by long and serious attention to abstruse subjects; grief; suppression of customary evacuations; excess of venery; the repulsion of cutaneous eruptions; long continued evacuations; obstructions in some of the viscera, as the liver, spleen, &c.

Hypochondriac persons ought never to fast long, and their food should be solid and nourishing. All acescent and windy vegeta

bles are to be avoided. Flesh-meats agree best with them, and their drink should be old claret or good madeira. Should these disagree with the stomach, water with a little brandy or rum in it may be drank.

Cheerfulness and serenity of mind are by all means to be cultivated. Exercise of every kind is useful. The cold bath is likewise beneficial; and where it does not agree with the patient, frictions with the flesh-brush or a coarse cloth may be tried. If the patient has it in his power, he ought to travel either by sea or land. A voyage or a long journey, especially towards a warmer climate, will be of more service than any medicine.

The general intentions of cure in this disease, are to strengthen the alimentary canal, and to promote the secretions. These intentions will be best answered by the different preparations of iron and the Peruvian bark, which, *after prompt evacuations*, may be taken in the same manner as directed in the preceding disease.

If the patient be costive, it will be necessary to make use of some gentle opening medicine; as pills composed of equal parts of aloes, rhubarb, and asafœtida. Two, three, or four of these may be taken as often as it shall be found needful to keep the body gently open. Such as cannot bear the asafœtida, may substitute castile soap in its place.

Though a cheerful glass may have good effects in this disease, yet all manner of excess is hurtful. Intense study and every thing that depresses the spirits, are likewise pernicious.

Though the general symptoms and treatment of nervous disorders were pointed out in the beginning of this chapter, yet, for the benefit of the unhappy persons afflicted with those obstinate and complicated maladies, I have treated several of their capital symptoms under distinct or separate heads. These, however, are not to be considered as different diseases, but as various modifications of the same disease. They all arise from the same general causes, and require nearly the same method of treatment. There are many other symptoms that merit particular attention, which the nature of my plan will not permit me to treat of at full length. I shall therefore omit them altogether, and conclude this chapter with a few general remarks on the most obvious means of preventing or avoiding nervous disorders.

In all persons afflicted with nervous disorders, there is a great delicacy and sensibility of the whole system, and an uncommon degree of weakness of the organs of digestion. These may be

either natural or acquired. When owing to a defect in the constitution, they are hardly to be removed; but may be mitigated by proper care. When induced by diseases, as long or repeated fever, profuse hæmorrhages, or the like, they prove also very obstinate, and will yield only to a course of regimen calculated to restore and invigorate the habit.

But nervous affections arise more frequently from causes, which it is in a great measure in our own power to avoid, than from diseases, or an original fault in the constitution. Excessive grief, intense study, improper diet, and neglect of exercise, are the great sources of this extensive class of diseases.

It has been already observed, that grief indulged destroys the appetite and digestion, depresses the spirits, and induces an universal relaxation and debility of the whole system. Instances of this are daily to be seen. The loss of a near relation, or any other misfortune in life, is often sufficient to occasion the most complicated series of nervous symptoms. Such misfortunes indeed are not to be avoided, but surely their effects, by a vigorous and proper exertion of the mind, might be rendered less hurtful. For directions in this matter we must refer the reader to the article **GRIEF**, in the chapter on the Passions.

The effects of intense study are pretty similar to those occasioned by grief. It preys upon the animal spirits, and destroys the appetite and digestion. To prevent these effects, studious persons ought, according to the Poet, *to toy with their books*.* They should never study too long at a time; nor attend long to one particular subject, especially if it be of a serious nature. They ought likewise to be attentive to their posture, and should take care frequently to unbend their minds by music, diversions, or going into agreeable company.

With regard to diet, I shall only observe, that nervous diseases may be induced either by excess or inanition. Both of these extremes hurt the digestion, and vitiate the humors. When nature is oppressed with fresh loads of food, before she has had time to digest and assimilate the former meal, her powers are weakened, and the vessels are filled with crude humors. On the other hand, when the food is not sufficiently nourishing, or is taken too seldom, the bowels are inflated with wind, and the humors, for want of regular fresh supplies of wholesome chyle, are vitiated. These extremes are, therefore, with equal care to be avoided. They both

* Armstrong on Health.

tend to induce a relaxation and debility of the nervous system, with all its dreadful train of consequences.

But the most general cause of nervous disorders is *indolence*. The active and laborious are seldom troubled with them. They are reserved for the children of ease and affluence, who generally feel their keenest force. All we shall say to such persons is, that the means of prevention and cure are both in their own power. If the constitution of human nature be such, that man must either labor or suffer diseases, surely no individual has any right to expect an exemption from the general rule.

Those, however, who are willing to take exercise, but whose occupations confine them to the house, and perhaps to an unfavorable posture, really deserve our pity. We have in a former part of the book endeavored to lay down rules for their conduct; and shall only add, that where these cannot be complied with, their place may, in some measure, be supplied by the use of bracing and strengthening medicines, as the Peruvian bark, with other-bitters; the preparation of steel; the elixir of vitriol, and such like.

Among many remarkable cases of the nervous kind, which I have often met with, one very lately attracted my notice in a peculiar manner. It was written by the patient himself, a gentleman of fortune and of liberal education; and it might be justly called a picture from nature, drawn with uncommon sensibility and force. The whole account being too long for insertion, the following extract may serve as a specimen of the writer's sufferings and descriptive talents:—"It is in vain," he says, "that I attempt to impress the Faculty with the real state of my sufferings. The symptoms of the disorders are not to be described, from their *unusual* pressure upon the mind; nor can they be conceived, I believe, by any but those who have suffered under them. They may be said to constitute a phenomenon in the science of diseases. Since I know of no terms to express them in, or language to describe them by, I am obliged to content myself with denominating the disorder and its effects together a *mental agony*, whose influence creates a real *tedium vitæ*. It attacks me sometimes when sitting, sometimes when walking; and if I were not to throw myself on a bed during the violence of the paroxysm, I should certainly dash myself to pieces. This is accompanied with a lassitude, restlessness, and total incapacity of attending to any concerns in life."

The same spirit animated every part of the affecting description; and the case was accompanied with a list of eleven eminent physicians, whom the patient had consulted at different times, but

whose names I suppress, as their prescriptions did him no good, and did them no honor. When the primary seat of the disease is in the mind, it is stooping to the low tricks of quackery to amuse a patient with false hopes of the efficacy of any medicine. The disappointment that follows, aggravates every painful symptom, and makes the unhappy sufferer look forward to death as the only resource. All I prescribe for him is travelling.

I should also have willingly inserted here an account of some other nervous affections of an extraordinary nature, had not their length exceeded the limits I prescribed to myself in these supplementary observations.

‘For this very prevalent and distressing class of complaints, there is not any remedy so much to be relied on as the habit of early rising, which necessarily implies that of retiring also at an early hour to rest. The energies of the nervous system become exhausted and worn out, by the impressions of external objects on the senses, as well as by the mental exertions which are perpetually going on while we are awake. Sleep is the means appointed by Nature for the renovation of these wasted energies. On waking from a state of sound sleep, we find ourselves, in the proper sense of the word, refreshed. Such refreshment, however, is chiefly to be expected from that sleep which takes place before midnight. After a certain hour of the evening, even the most healthy persons experience an increased quickness of the pulse. In feeble constitutions this nocturnal access of fever is still more strongly marked; and the repetition of it is the true cause of that worn, haggard appearance, by which the votaries, or rather the victims, of fashion may, in general, be distinguished. It is by no means advisable to curtail the natural time of sleep. The great Lord Mansfield, himself an early riser, and whose long-protracted life gives importance to his opinion on any subject connected with the preservation of health, used to counsel his friends, as one of the best means of obtaining that blessing, “TO CULTIVATE SLEEP.” But it must be the sound repose of temperance, which can only be found during the early hours of night, not the perturbed slumbers of the noon-day couch. Nothing, indeed, tends more to debilitate the constitution, and in an especial manner to aggravate every species of nervous complaint, than remaining in bed till a late hour of the morning.

‘Could “the still small voice of reason” expect to be heard in opposition to the imperious mandates of fashion, the present cus-

tom of taking the principal meal at so very late an hour of the day, might also be denounced as contributing not a little to produce diseases of the nerves. After the system has been exhausted by long fasting, the stomach is suddenly replenished with a quantity of rich food and stimulating liquors, which the empty vessels absorb with an eagerness far beyond their powers to assimilate. Of this, the immediate consequence is drowsiness, but if the flagging spirits be roused by the presence of company, or the free use of wine, the circulation is hurried; the countenance becomes flushed, and a temporary exhilaration takes place, which must inevitably be compensated by an equivalent depression during some other period of the natural day. Sleep is disturbed and interrupted, in consequence of the blood-vessels of the brain being irritated by the sudden influx of fresh chyle, by which they are distended; and rendered, more particularly in the supine posture, liable to rupture. May we not venture, without being accused of entering too far into theoretical speculations, to attribute, in part at least, to these causes, the augmented frequency of apoplexy, and its melancholy sequel, palsy? The palpable increase of which complaints in this country of late years is a subject of serious alarm.*

OF THE EYE.

No organ of the body is subject to more diseases than the eye; nor is there any one of which the diseases are more difficult to cure. Though more ignorant persons pretend to cure these than any other class of diseases, yet a very superficial acquaintance with the structure of the eye, and the nature of vision, will be sufficient to convince any one of the danger of trusting to them. These diseases often exceed the skill of the most learned physician; hence we may easily infer the danger of trusting them to ignorant quacks, who, without all peradventure, put out more eyes than they cure. But, though the diseases of the eye can seldom be cured, they might often, by due care, be prevented; and, even where the sight is totally lost, many things might be done, which are generally neglected, to render the unhappy person both more useful to himself and to society.*

* There are many employments of which blind persons are very capable, as knitting, carding, turning a wheel, teaching languages, &c. Nor are instances wanting of persons

The eyes are hurt by viewing bright or luminous objects; keeping the head too long in a hanging posture; violent headaches; the long use of bitters; the effluvia from acrid or volatile substances; and by various diseases, as the smallpox, measles, &c.; but, above all, from night-watching, and candlelight studies. Long fasting is likewise hurtful to the eyes, and frequent heats and colds are no less pernicious. The eyes are often hurt by the stoppage of customary evacuations. All kinds of excess are likewise hurtful to the sight, particularly the immoderate use of ardent spirits, and other strong liquors.

In all diseases of the eyes, especially those attended with inflammation, the antiphlogistic regimen ought to be observed. The patient must abstain from all spirituous liquors. The smoke of tobacco, smoky rooms, the vapors of onions and garlic, and all vivid lights and glaring colors, are carefully to be avoided. The drink may be water, whey, or small beer; and the aliment must be light and of easy digestion.

For preventing disorders of the eyes, issues and setons are of prime use. Every person, whose eyes are tender, ought to have one or more of these in some part of the body. It will likewise be of use to keep the body gently open, and either to bleed or purge every spring and fall. All excess and night studies are to be avoided. Such as do not choose a seton or an issue, will reap benefit from wearing a small Burgundy-pitch plaster between their shoulders.

Gutta Serena, or Amaurosis, is an abolition of the sight, without any apparent cause or fault in the eyes. When it is owing to a decay or wasting of the optic nerve, it does not admit of a cure; but when it proceeds from a compression of the nerves, by redundant humors, these may in some measure be drained off, and the patient relieved. For this purpose, the body must be kept open with the laxative mercurial pills. If the patient be young, and of a sanguine habit, he may be bled. Cupping, with scarifications on the back part of the head, will likewise be of use. A running at the nose may be promoted by volatile salts, and stimulating powders. But the most likely means for relieving the patient are issues or blisters kept open for a long time on the back part of the

who have arrived at the highest pitch of learning, without having the least idea of sight. Witness the late famous Nicholas Sanderson, of Cambridge, and my worthy friend, Dr. Thomas Blacklock of Edinburgh. The former was one of the first mathematicians of his age, and the latter, besides being a good poet and philosopher, was master of all the learned languages, and a very considerable adept in the liberal arts.

head, behind the ears, or on the neck. I have known these restore sight, even after it had been for a considerable time lost.

Should these fail, recourse must be had to a mercurial salivation; or, what will perhaps answer the purpose better, twelve grains of corrosive sublimate may be dissolved in a pint and a half of brandy, and a table-spoonful of it taken twice a-day, drinking half a pint of the decoction of sarsaparilla after it.

A *Cataract* is an obstruction of the pupil, by the interposition of some opaque substance which either diminishes or totally extinguishes the sight. It is generally an opacity of the crystalline humor. In a recent or beginning cataract, the same medicines are to be used as in the gutta serena; and they will sometimes succeed. But when this does not happen, and the cataract becomes firm, it must be couched, or rather extracted. I have resolved a recent cataract by giving the patient frequent purges with calomel, keeping a poultice of fresh hemlock constantly upon the eye, and a perpetual blister on the neck.*

Myopia, or short-sightedness; and the *Presbyopia*, or seeing only at too great a distance, are disorders which depend on the original structure or figure of the eye, and therefore admit of no cure. The inconvenience arising from them may however be in some measure remedied by the help of proper glasses. The former requires the aid of a concave, and the latter of a convex glass.

Strabismus, or *squinting*, depends upon an irregular contraction of the muscles of the eye from spasm, palsy, epilepsy, or an ill habit. Children often contract this disorder by having their eyes unequally exposed to the light. They may likewise acquire it by imitation from a squinting nurse, or playfellow. As this disorder can hardly be cured, parents ought to be careful to prevent it. Almost the only thing which can be done for it is to contrive a mask for the child to wear, which will only permit him to see in a straight direction.

In most cases of squinting we shall be enabled to afford essential relief, by the simple process of binding up the sound eye every day, for two or three hours, so as to oblige the patient to make use of the debilitated organ, and according as it is more or less indisposed, to keep the other more or less veiled, and continuing these means until the diseased eye is enabled fully and properly to perform its functions.

Spots or Specks on the eyes are generally the effect of inflam-

* In both these cases electricity merits a trial.

mation, and often appear after the small-pox, the measles, or violent ophthalmia. They are very difficult to cure, and often occasion total blindness. Brisk mercurial purges; blisters to the back part of the ears, and neck; and a liniment made of oil of almonds and fresh clear lime water, are the best remedies. The patient should confine himself to the most abstemious diet. When these do not succeed, a surgical operation may be tried: the success of this, however, is always very doubtful.

The Blood-shot Eye may be occasioned by a stroke, a fall, retching, vomiting, or violent coughing. I have frequently known it happen to children in the whooping-cough. It appears at first like scarlet, and afterwards of a livid or blackish color. This disorder generally goes off without medicine. Should it prove obstinate, the patient may be bled, and have his eyes fomented with a decoction of comphry roots and elder flowers. A soft poultice may be applied to the eyes; and the body should be kept open by gentle purgatives.

The Watery or Weeping Eye is generally occasioned by a relaxation or weakness of the glandular parts of that organ. These may be braced and strengthened by bathing the eye with brandy and water, Hungary water, or rose water, with white vitriol dissolved in it. Medicines which make a revulsion are likewise proper; as mild purgatives, perpetual blisters on the neck, and bathing the feet frequently in lukewarm water.

When this disease proceeds from an obstruction of the lachrymal duct, or natural passage of the tears, it is called a *fistula lachrymalis*, and can only be cured by a surgical operation.*

There are many diseases to which the eye is liable, requiring the best surgical treatment, which it would serve to little purpose to introduce into a work of family medicine, several of them demanding different means of treatment, as the affection may be in the acute or chronic stage. (See *Inflammation of the eyes*.)

THE EAR.

THE functions of the ear may be injured by wounds, ulcers, or any thing that hurts its fabric. The hearing may likewise be hurt by excessive noise; violent colds in the head; fevers; hard

* A weeping or watery eye is often the mark of a scrofulous habit.

wax, or other substances sticking in the cavity of the ear; and too great a degree of moisture or dryness in the ear. Deafness is very often the effect of old age, and is incident to most people in the decline of life. Sometimes it is owing to an original fault in the structure or formation of the ear itself. When this is the case, it admits of no cure; and the unhappy person not only continues deaf, but generally likewise dumb for life.*

When deafness is the effect of wounds or ulcers of the ear; or of old age, it is not easily removed. When it proceeds from cold of the head, the patient must be careful to keep his head warm, especially in the night; he should likewise take some gentle purges, and keep his feet warm, and bathe them frequently in lukewarm water at bed-time. When deafness is the effect of a fever, it generally goes off after the patient recovers. If it proceeds from dry wax sticking in the ears, it may be softened by dropping oil into them; afterwards they must be syringed with warm milk and water.

If deafness proceed from dryness of the ears, which may be known by looking into them, half an ounce of the oil of sweet almonds, and the same quantity of opodeldoc, or tincture of asa-fœtida may be mixed together, and a few drops of it put into the ear every night at bed-time, stopping them afterwards with a little wool or cotton. Some, instead of oil, put a small slice of the fat of bacon into each ear, which is said to answer the purpose very well. When the ears abound with moisture, it may be drained

* Though those who have the misfortune to be born deaf are generally suffered to continue dumb, and consequently are in a great measure lost to society, yet nothing is more certain than that such persons may be taught not only to read and write, but also to speak, and to understand what others say to them. Teaching the dumb to speak, will appear paradoxical to those who do not consider that the formation of sounds is merely mechanical, and may be taught without the assistance of the ear. This is not only capable of demonstration, but is actually reduced to practice by the ingenious Mr. Thomas Braidwood of Edinburgh. This gentleman has, by the mere force of genius and application, brought the teaching of dumb persons to such a degree of perfection, that his scholars are generally more forward in their education, than those of the same age who enjoy all their faculties. They not only read and write with the utmost readiness, but likewise *speak*, and are capable of holding conversation with any person in the light. What a pity any of the human species should remain in a state of idiotism, who are capable of being rendered as useful and intelligent as others! We mention this not only from humanity to those who have the misfortune to be born deaf, but also in justice to Mr. Braidwood, whose success has far exceeded all former attempts this way; and indeed it exceeds imagination itself so far, that no person who has not seen and examined his pupils, can believe what they are capable of. As this gentleman, however willing, is only able to teach a few, and as the far greater part of those who are born deaf cannot afford to attend him, it would be an act of great humanity, as well as public utility, to erect an academy for their benefit.

off by an issue or seton, which should be made as near the affected parts as possible.

Some, for the cure of deafness, recommend the gall of an eel mixed with spirit of wine to be dropped into the ear; others, equal parts of Hungary water and spirit of lavender. Ox-gall and balsam of tolu, equal parts, is a good application to be dropped in the ear in cases where the disease depends upon an ulcer. If from an abscess, suppuration must be promoted by means of emollient poultices, steam, &c. Etmuller extols amber and musk; and Brookes says, he has often known hardness of hearing cured by putting a grain or two of musk into the ear with cotton-wool. But these and other applications must be varied according to the cause of the disorder.*

Though such applications may sometimes be of service, yet they much oftener fail, and frequently they do hurt. Neither the eyes nor ears ought to be tampered with; they are tender organs, and require a very delicate touch. For this reason, what we would chiefly recommend in deafness, is, to keep the head warm. From whatever cause the disorder proceeds, this is always proper; and I have known more benefit from it alone, in the most obstinate cases of deafness, than from all the medicines I ever used.

Ear-ache sometimes continues for many days without any apparent inflammation, and is then frequently removed by filling the ear with cotton or wool, wetted with tincture of opium or ether, or even with warm oil, or warm water. Sometimes a pain in the ear is a consequence of the association with a diseased tooth, in which case the ether should be applied to the cheek over the suspected tooth, or a grain of opium, with a little camphor, may be applied to the tooth itself.

TASTE AND SMELL.

THOUGH these senses are not of so great importance to man in a state of society, as sight and hearing, yet as the loss of them is

* A gentlemen, on whose veracity I can depend, told me, that after using many things to no purpose for an obstinate deafness, he was at last advised to put a few drops of his own urine warm into his ears every night and morning, from which he received great benefit. It is probable that a solution of *muriate of ammonia*, in water, would produce the same effect. A solution of common salt will answer the same purpose as in this case, where the deafness proceeds from an accumulation of hardened wax.

attended with some inconvenience, they deserve our notice. They are seldom to be restored when lost; which ought to make us very attentive to their preservation, by carefully avoiding whatever may in the least prove injurious to them. As there is a very great affinity between the organs of tasting and smelling, whatever injures the one gradually affects the other,

Luxury is highly injurious to these organs. When the nose and palate are frequently stimulated by fragrant and poignant dishes, they soon lose the power of distinguishing taste and odors with any degree of nicety. Man, in a state of nature, may perhaps have these faculties as acute as any other animal.

The sense of smelling may be diminished or destroyed by diseases; as the moisture, dryness, inflammation, or suppuration of that membrane, which lines the inside of the nose, commonly called the schneiderian membrane; the compression of the nerves which supply this membrane, or some fault in the brain itself at their origin. A defect, or too great a degree of solidity, of the small spungy bones of the upper jaw, the caverns of the forehead, &c. may likewise impair the sense of smelling. It may also be injured by a collection of fœtid matter in those caverns, which keeps constantly exhaling from them. Few things are more hurtful to the sense of smelling than taking great quantities of snuff.

When the nose abounds with moisture, after gentle evacuations, such things as tend to take off irritation, and coagulate the thin sharp serum, may be applied; as the oil of aniseed mixed with fine flour; or camphor dissolved in oil of almonds. The vapors of amber, frankincense, gum-mastic, and benjamin, may likewise be received into the nose and mouth.

For moistening the mucus, when it is too dry, some recommend snuff made of the leaves of marjoram, mixed with the oil of amber, marjoram, and aniseed; or a sternutatory of calcined white vitriol; twelve grains of which may be mixed with two ounces of marjoram-water, and filtrated. The steam or vapor of vinegar upon hot iron received up the nostrils, is likewise of use for softening the mucus, opening obstructions, &c.*

If there is an ulcer in the nose, it ought to be dressed with some

* The most efficacious sternutatory, and which will frequently be found useful in obstinate head-aches, and in complaints of the eyes, as well as in dryness of the nose, and deficiency of smell, is composed of equal parts of the vitriolated mercury, fine sugar, and powder of liquorice root. These are to be well mixed together. A pinch of this composition drawn forcibly up the affected nostril a short time previous to going to bed, generally produces a copious discharge of watery mucus during the night, without sneezing.

emollient ointment, to which, if the pain be very great, a little laudanum may be added. If it be a venereal ulcer, it is not to be cured without mercury. In that case, the solution of the corrosive sublimate in brandy may be taken, as directed in *gutta serena*. The ulcer ought likewise to be washed with it; and the fumes of cinnabar may be received up the nostrils.

If there be reason to suspect that the nerves, which supply the organs of smelling are inert, or want stimulating, volatile salts, strong snuffs, and other things wick occasion sneezing, may be applied to the nose. The forehead may likewise be anointed with balsam of Peru, to which may be added a little of the oil of amber.

The *taste* may be diminished by crusts, filth, mucus, apthæ, pellicles, or warts, covering the tongue. It may be depraved by a fault of the saliva, which, being discharged into the mouth, gives the same sensations as if the food which the person takes had really a bad taste; or it may be entirely destroyed by injuries done to the nerves of the tongue and palate. Few things prove more hurtful either to the sense of tasting or smelling, than obstinate colds, especially those which affect the head.

When the taste is diminished by filth, mucus, &c. the tongue ought to be scraped, and frequently washed with a mixture of water, vinegar, and honey, or some other detergent. When the saliva is vitiated, which seldom happens, unless in fevers or other diseases, the curing of the disorder is the cure of this symptom. To relieve it, however, in the mean time, the following things may be of use : If there be a bitter taste, it may be taken away by vomits, purges, and other things which evacuate bile. What is called a nidorous taste, arising from vitiated humors, is corrected by the juice of citrons, oranges, and other acids. A salt taste is cured by a plentiful dilution with watery liquors. An acid taste is destroyed by absorbents, and alkaline salts.

When the sensibility of the nerves, which supply the organs of taste is diminished, the chewing of horse-radish, or other stimulating substances, will help to recover it.

OF THE TOUCH.

THE sense of touch may be injured by any thing that obstructs the nervous influence, or prevents its being regularly conveyed to

the organs of touch; as pressure, extreme cold, &c. It may likewise be hurt by too great a degree of sensibility, when the nerve is not sufficiently covered by the cuticle or scarf-skin, or where there is too great a tension of it, or it is too delicate. Whatever disorders the functions of the brain and nerves, injures the sense of touch. Hence it appears to proceed from the same general causes as palsy and apoplexy, and requires nearly the same mode of treatment.

In a *stupor*, or defect of touching, which arises from an obstruction of the cutaneous nerves, the patient must first be purged; afterwards such medicines as excite the action of the nerves, or stimulate the system, may be used. For this purpose the spirit of hartshorn, horse-radish, &c. may be taken inwardly; the disordered parts, at the same time, may be frequently rubbed with fresh nettles, or spirit of *sal ammoniac*. Blistering-plasters, and sinapisms applied to the parts will likewise be of use, as also warm bathing, especially in the natural hot baths.

In a work like this, which is wholly designed for popular instruction, it would have been a useless display of anatomical skill to mention such disorders of the senses as admit of no remedy, because they are owing to a defect in the organization or structure of the brain, whence the nerves, the organs of sensation, take their rise. But it may be proper to make a few remarks on one or two general causes of nervous weakness, and of consequent debility or imperfection of the senses, which proceed wholly from our own misconduct.

Nothing so much relaxes the nervous system, so much blunts the acuteness of every sense, and destroys its energy, as intemperance. To say of a man when drunk, that *he has lost his senses*, is literally true in the most comprehensive meaning of the word. He can neither see, hear, taste, smell, nor feel, with exactness; and though he may flatter himself that with the return of sobriety, he recovers his senses also, yet they become more and more impaired by every debauch, till frequent repetitions of the frantic indulgence consign him to blindness, to deafness, and to the grave. Excess in eating produces similar effects, and, like the touch of the torpedo, benumbs every faculty. It particularly vitiates the taste and smell, and thus defeats the chief purposes for which these senses were given, to inform us of the wholesome or noxious properties of every thing we eat and drink.

Uncleanliness is also highly injurious to the organs of sensation. Perhaps the benignity of Nature is not displayed in any thing more

strongly, than in the warnings she gives of this evil, and in her own endeavors to avert it. She has left us so little to do, that we deserve no pity for the severest punishment of our neglect. See how kindly she has guarded the extremities of the nerves all over the body, the interior parts of the nose, the mouth, the ear, and the eye, against external annoyance ! Observe with what efforts, entirely independent of our will, she strives to relieve those delicate organs from all impurities ! The uneasiness we feel on such occasions ought to arouse our immediate attention. Shall we suffer dirt to gather upon the skin, to dull the senses of feeling, to obstruct the pores, and to drive back into the system the noxious particles which nature endeavors to throw off, when the use of a little soap and water would prevent every inconvenience ? Is it too much trouble to wash the ears ; to dip the face with the eyes open in a basin of clean water four or five times every morning, to rinse the nose and mouth ; and to keep the tongue clean, not by scraping it, but by attending to the state of the stomach, of which the tongue is an index ?

SCIRRHUS AND CANCER.

A **SCIRRHUS** is a hard indolent tumor, usually seated in some of the glands. If the tumor becomes large, unequal, of a livid, blackish, or leaden color, and is attended with violent pain, it gets the name of an *occult cancer*. When the skin is broken, and a *sanies* or ichorous matter of an abominably fœtid smell, is discharged from the sore, it is called an open or ulcerated cancer. Persons after the age of forty-five, particularly women, and those who lead an indolent sedentary life, are most subject to this disease. It is most commonly confined to glands, and particularly the testes and mammæ, but is now and then, nevertheless, to be met with in the uterus, as likewise in the face and other parts that are thinly covered with flesh, and which at the same time are a good deal exposed to external irritation, such as the lower lip, the angles of the eyes, the organs of vision, the wings of the nose, and the tongue. A cancer is an ulcer of the very worst kind, with an uneven surface, and ragged and painful edges, which spreads in a very rapid manner, discharges a thin acrimonious matter, that excoriates the neighboring integuments, and has a very fœtid smell, and which is

usually preceded by a hard or scirrhus swelling of the part, if glandular.

Causes.—This disease is often owing to suppressed evacuations; hence it proves so frequently fatal to women of a gross habit; particularly old maids and widows, about the time when the menstrual flux ceases. It may likewise be occasioned by excessive fear, grief, anger, religious melancholy, or any of the depressing passions. Hence the unfortunate, the choleric, and those persons who devote themselves to a religious life in convents or monasteries, are often afflicted with it. It may also be occasioned by the long continued use of food that is too hard of digestion, or of an acrid nature; by barrenness, celibacy, indolence, cold, external injuries, friction, and pressure. Women often suffer from the last of these by means of their stays, which squeeze and compress their breasts so as to occasion great mischief. Sometimes the disease is owing to an hereditary disposition.

Symptoms.—This disorder seems often very trifling at the beginning. A hard tumor, about the size of a hazle-nut, or perhaps smaller, is generally the first symptom. This will often continue for a long time without seeming to increase, or giving the patient great uneasiness; but if the constitution be hurt, or the tumor irritated by pressure, or improper treatment of any kind, it begins to extend itself to the neighboring parts, by pushing out a kind of roots or limbs. It then gets the name of *cancer*, from a fancied resemblance between these limbs and the claws of a crab.

The color of the skin begins to change, which is first red, afterwards purple, then bluish, livid, and at last black. The patient complains of heat, with a burning, gnawing, shooting pain. The tumor is very hard, rough, and unequal, with a protuberance, or rising, in the middle; its size increases daily, and the neighboring veins become thick, knotty, and of a blackish color.

The skin at length gives way, and a thin sharp ichor begins to flow, which corrodes the neighboring parts till it forms a large unsightly ulcer. More occult cancers arise, and communicate with the neighboring glands. The pain and stench become intolerable; the appetite fails; the strength is exhausted by a continual hectic fever; at last, a violent hæmorrhage, or discharge of blood, from some part of the body, with faintings or convulsion fits, generally put an end to the miserable patient's life.

Regimen.—The diet ought to be light, but nourishing. All strong liquors, and high-seasoned or salted provisions, are to be avoided. The patient may take as much exercise as he can easily bear; and

should use every method to divert thought and amuse his fancy. All kinds of external injury are carefully to be guarded against, particularly of the affected part, which ought to be defended from all pressure, and even from the external air, by covering it with fur or soft flannel.

Treatment.—This is one of those diseases for which no certain remedy is yet known. Its progress, however, may sometimes be retarded, and some of its most disagreeable symptoms mitigated, by proper applications. One misfortune attending the disease is, that the unhappy patient often conceals it too long. Were proper means used in due time, a cancer might often be prevented; but after the disorder has arrived at a certain height, it generally sets all medicine at defiance.

When a scirrhus tumor is first discovered, the patient ought to observe a proper regimen, and to take twice or thrice a-week a dose of the common purging mercurial pill. Some blood may also be let, and the part affected may be gently rubbed twice a-day, with a little of the mercurial ointment, and kept warm with fur or flannel. The food must be light, and a pint of the decoction of woods or sarsaparilla may be drank daily. I have sometimes discussed hard tumors, which had the appearance of beginning cancers, by a course of this kind.

To allay pain and irritation, and, probably, thereby retard the progress of the disease, opium may be applied externally, mixed with the different preparations of lead used as sedatives and discutients; and much may be done in all incipient scirrhus tumors by repeatedly blistering the part, having first had recourse to occasional purgatives, and a cooling diet.

Should the tumor, however, not yield to this treatment, but, on the contrary, become larger and harder, it will be proper to extirpate it either by the knife or caustic. Indeed, whenever this can be done with safety the sooner it is done the better. It can answer no purpose to extirpate a cancer after the constitution is ruined, or the whole mass of humors corrupted by it. This, however, is the common way, which makes the operation so seldom succeed. Scirrhus tumors are often removed with perfect safety, and thereby prevented from degenerating into true cancer, when extirpation is not delayed too long; but after a tumor of this description has ulcerated, thereby assuming the cancerous character, and has afforded an opportunity for an absorption of the matter into the system, there is every reason to suppose that a complete cure can seldom, if ever, be effected. Few people will submit to the extirpation till

death stares them in the face, whereas, if it were done early, the patient's life would not be endangered by the operation, and it would generally prove a radical cure.

When the cancer is so situated that it cannot be cut off, or if the patient will not submit to the operation, such medicines as will mitigate or relieve the most urgent symptoms may be used. Dr. Home says, that half a grain of the corrosive sublimate of mercury, dissolved in a proper quantity of brandy, and taken night and morning, will often be of service in cancers of the face and nose. He likewise recommends an infusion of the *solanum*, or night-shade, in cancers of the breasts.

But the medicine most in repute at present for this disease is hemlock. Dr. Stork, physician at Vienna, has of late recommended the extract of this plant as very efficacious in cancers of every kind. He advises the patient to begin with very small doses, as two or three grains, and to increase the dose gradually till some good effect be perceived, and there to rest without further increase.

Deadly nightshade and henbane are medicines of the same class with hemlock, and the timely use of them has sometimes proved advantageous in glandular tumors and indurations that are likely to become cancerous. These have also been employed, with others of the narcotic class, in external applications, as well as the hemlock. When used in this way the leaves may be boiled in milk, so as to form a decoction sufficiently strong, with which the part is to be frequently fomented.

The powder of hemlock is by some preferred to the extract. They are both made of the fresh leaves, and may be used nearly in the same manner. Dr. Nicholson of Berwick says, he gradually increased the dose of the powder from a few grains to half a drachm, and gave near four drachms of it in a day with remarkably good effects. The hemlock may also be used externally either as a poultice or fomentation. The sore may likewise be kept clean by injecting daily a strong decoction of the tops of the leaves into it.

Few things contribute more to the healing of foul sordid ulcers of any kind than keeping them thoroughly clean. This ought never to be neglected. The best application for this purpose seems to be the carrot poultice. The root of the common carrot may be grated, and moistened with as much water as will bring it to the consistence of a poultice or cataplasm. This must be applied to the sore, and renewed twice a-day. It generally cleans the sore, eases the pain, and takes away the disagreeable smell,

which are objects of no small importance in such a dreadful disorder.* In every species of open cancer, the air should be excluded as much as possible; a double covering of oil-silk may therefore be applied over the dressings.

Wort, or an infusion of malt, has been recommended, not only as a proper drink, but as a powerful medicine in this disease. It must be frequently made fresh, and the patient may take it at pleasure. Two, three, or even four English pints of it may be drank every day for a considerable time. No benefit can be expected from any medicine in this disease, unless it be persisted in for a long time. It is of too obstinate a nature to be soon removed; and, when it admits of a cure at all, it must be brought about by inducing an almost total change of the habit, which must always be a work of time. Setons or issues in the neighborhood of the cancer have sometimes good effects.† A cancerous ulcer of the tongue has been cured by nitric acid ‡ and opium, which had resisted various remedies. An opiate was given at night; and the acid, to prevent it from corroding the teeth, was directed to be sucked through a tube. In fourteen days after the exhibition of this medicine, healthy granulations were seen to shoot out from the bottom of the ulcer, which gradually healed from this time; and in the course of three months, although half the tongue had been in a state of ulceration, was perfectly healed. Nothing was applied to the diseased part but a lotion composed of the extract of hemlock, rectified spirit and water, to which little or no efficacy was ascribed.

Applications of a caustic nature have been much used in the ulcerated stage of cancer, and they have been employed under a variety of forms; but their principal ingredients have been well

* London Medical Essays.

† In a cancer which had set all medicines, and even surgery at defiance, I lately saw remarkable effects from an obstinate perseverance in a course of antiseptics. I ordered the deep ulcers to be washed to the bottom by means of a syringe, twice or thrice a-day, either with an infusion of the bark, or a decoction of carrot, and that the patient should take, four or five times a-day, a glass of good wine, with half a drachm of the best powdered bark in it. The sores, after being washed, were likewise sprinkled with the same powder. When the patient began this course, her death was daily expected. She continued it for about two years, with manifest advantage; but being told by an eminent surgeon, that the bark would not cure a cancer, and that the sores ought not to be washed, she discontinued the practice, and died in a few weeks. This course was not expected to cure the cancer, but to prolong the patient's life, which it evidently did almost to a miracle.

‡ Take	Diluted Nitric Acid,	1 ounce.
	Honey	2 ounces.
	Pure Water,	2 pints.

Mix. Three table-spoonfuls are to be taken frequently throughout the day.

known to be either arsenic or corrosive sublimate. The most noted are the Arundel powder, Guy's powder, and Plunket's powder: which last is a composition of crow's-foot, dog's-fennel, and arsenic. None of these have ever produced the smallest benefit; on the contrary, they all occasion infinitely more pain than the more certain method of cure, when taken in due time, by the operation of cutting out the cancerous core; but unfortunately, by such empirical, mercenary, and fallacious means as the above, the unhappy patient has been but too frequently beguiled beyond the period when the operation might have been attended with success.

As a topical application in external cancer, lint dipped in a solution of the subborate of soda,* and applied to the ulcerated surface, removing it as often as it becomes dry, has been frequently attended with a good effect.

When all other medicines fail, recourse must be had to opium, as a kind of solace. This will not, indeed, cure the disease, but it will ease the patient's agony, and, render life more tolerable while it continues.

To avoid this dreadful disorder, people ought to use wholesome food; to take sufficient exercise in the open air; to be as easy and cheerful as possible; and carefully to guard against all blows, bruises, and every kind of pressure upon the breasts, or other glandular parts.†

In the long catalogue of human affections, there is scarcely one to be more dreaded than the cancer. It is no less painful than loathsome; it kills by inches; is seldom cured except by the knife; and even that does not always succeed. I have frequently seen small tumors in the breast, which might perhaps have ended in cancers, yield to the camphorated mercurial ointment, applied twice a-day; but after the scirrhus had broke, and become a cancer, I do not remember having ever seen it cured; nor do I believe that the whole *materia medica* can afford a remedy for it.

Yet there are plenty of people who *cure cancers*; and no one who has a sufficient share of faith, can be at a loss for a cancer-doctor. One may see even the fronts of houses inscribed with the

* Take	Solution of Subborate of Soda,	3 drachms.
	Extract of Henbane,	2 drachms.
	Distilled Water made warm,	8 ounces.

Make a lotion to be applied to the part affected.

† As hemlock is the principal medicine recommended in this disease, we would have given some directions for the gathering and preparing of that plant; but as its different preparations are now kept in the shops, we think it much safer for people to get them there, with proper directions for using them.

words, "Cancers *cured* here," in large characters. I lately had a patient, who once fancied that her breast was a little cancerous, and, under that impression, was kept for two years in the hands of a female cancer-curer, though the lady in reality had not the least symptom of a cancer about her.*

POISONS.

EVERY person ought, in some measure, to be acquainted with the nature and treatment of poisons. They are not unfrequently taken unawares, and their effects are often so sudden and violent, as not to admit of delay, or allow time to procure the assistance of medical men.

There are four kinds of poisons; viz. mineral, vegetable, aerial, and animal.

Mineral poisons are distinguished from vegetable ones by their action. The former corrode, stimulate, and inflame; the latter generally stupify, without leaving any marks of inflammation.

None of the mineral poisons prove fatal, till after a most excruciating operation, of at least two or three hours; whereas some of the vegetable ones terminate life in a few minutes. From the animal poisons the distinction is as remarkable. The aerial poisons operate still more quickly than any other classes, and their action on respiration is of so peculiar and immediate influence, that it can seldom be mistaken.

Poison seldom remains long in the stomach before it occasions sickness, with an inclination to vomit. This shows plainly what ought to be done. Indeed, common sense dictates to every one, that if any thing has been taken into the stomach which endan-

* In a work lately published on cancer by Mr. Carmichael, a number of cases are adduced in favor of the utility of iron as a remedy in this disease. The preparation of this metal, to which he gives the preference, is the carbonate, that is, the precipitate formed by saturating a solution of the salt of steel (*ferrum vitriolatum*) with the fixed alkali. Its properties are nearly the same as those of the rust of iron, when properly prepared. Of this the patient may take to the extent of a drachm per day, formed into pills, with the addition of any aromatic, to make it sit more easily on the stomach. The same preparation, finely levigated, may also be advantageously sprinkled on the surface of the sore; or a wash, made by diluting the muriated tincture of steel with water, may be used. This answers well also as an injection, when the uterus is the seat of complaint. On the authority of this gentleman, whose practice appears to be founded on experience, and is detailed with candor, in so deplorable a disease, the remedy proposed by him certainly merits a trial.

gers life, it ought immediately to be discharged. Were this duly regarded, the danger arising from poisons might often be avoided.

MINERAL POISONS.

Symptoms.—When a mineral poison has been swallowed,* the symptoms are an austere taste, fetid breath, constriction of the pharynx and gullet; hiccough; nausea or vomiting of brown or bloody matter; anxiety and faintings; heat, with violent pain at the pit of the stomach; black and offensive stools; small pulse; frequent and irregular palpitations; great thirst and burning heat; breathing difficult: urine scanty, red and bloody; delirium; convulsions of an epileptic type, and death.

Treatment.—Vomiting is to be immediately excited; and encouraged by large and long-continued draughts of sugared water, linseed tea, or other emollient fluids. If arsenic has been taken in solution, limewater, or chalk and water, may be drank freely. Inflammatory symptoms are to be combated; bleeding from the arm, and leeches to the region of the stomach; fomentations, and frequent emollient clysters, as symptoms may require.

[A German chemist, by the name of Bunzen, has lately discovered an antidote to the virulent effects of arsenic. His experiments have attracted much attention throughout Europe, and have been repeated and varied by the most eminent chemists of the day, until there no longer remains the slightest doubt of the powers of the proposed remedy, which is the *hydrated peroxide of iron*. It may be prepared in the following manner:—Dissolve an ounce of iron-filings in a mixture of four ounces of nitric and four ounces of muriatic acid, in a large glass or porcelain vessel. To the solution, sixteen ounces of distilled water are to be added, and then two or three ounces of liquid ammonia are to be mixed with it. The hydrated peroxide of iron immediately falls to the bottom of the vessel. The liquid is then to be drained off, and the *antidote* remains, ready for use. It is of the consistence of soft pap. About twelve ounces of it are obtained by using the above mentioned quantities of the different substances. One table spoonful weighs about an ounce.

It should be given in doses of from two drachms to a quarter

* In the Philosophical Transactions for 1811, Mr. Brodie has shown by experiments, that the external application of arsenious acid to abraded surfaces, is analogous with its internal exhibition, but often more rapid in its effects by the latter than the former mode.

of an ounce, every ten minutes, until at least one ounce is taken. Emetics, however, should never be dispensed with, but should be freely used until the stomach is well cleansed, and then the antidote administered. Care should be taken that the peroxide be free from carbonic acid, as that somewhat impairs its efficacy.]

Tests.—To ascertain when arsenic is present in any fluid, a solution of the ammoniacal sulphate of copper added to it, produces, generally, a beautiful grass green precipitate; but if added to wine, the precipitate would be a dark-colored blue. Sulphuretted hydrogen precipitates arsenic from tea of a beautiful yellow color, and changes a solution of arsenic in water of a yellow color, without any precipitate. From albumen, gelatine and bile, containing arsenic in solution, nitrate of silver produces a white precipitate. The ammoniaco-nitrate of silver produces a yellow precipitate, soluble in nitric acid and ammonia; but the presence of muriates or phosphates, or their acids, renders this a fallacious test.

Make with the suspected fluid a broad streak on writing paper, then draw a piece of lunar caustic several times over the moistened part, which will become yellow if arsenic or alkaline phosphate be present. If it be arsenic, the streak will be rough, curdy, and flocculent, as if done with a crayon; if a phosphate, homogeneous and uniform. In a few minutes the phosphoric yellow fades into a dull green, becomes darker, and ultimately black. The arsenical yellow remains permanent, or nearly so, for some time, when it becomes brown. These distinctions are to be viewed by reflected, not transmitted light, the test being made in the shade.

The most certain test to detect the presence of arsenic, is to reduce it to its metallic state, by calcining the dried suspected matter in a glass tube, with equal parts of charcoal and potash; when, if arsenic be present, in however minute a quantity, it will be sublimed and stick to the inside of the tube, in the form of a shining metallic coating, consisting of cubic crystals.

[White arsenic (deutoxide of arsenic) when thrown on a hot iron or burning coals, is volatilized in copious white fumes, and diffuses a strong garlic smell.]

ANTIMONY, AND ITS PREPARATIONS.

Emetic tartar, &c.—When an excess of emetic tartar, or any other of the preparations of antimony have been taken, we may remark the following

Symptoms, viz. Those occasioned by acids, with copious and

obstinate vomitings, abundant stools, constrictions of the throat, cramps, symptoms of intoxication, and prostration of strength.

Treatment.—Emetic tartar generally defeats itself by the vomiting it soon occasions after it is taken; but when this does not take place, it should be excited by tickling the throat with a feather or the finger; and encouraged by copious draughts of mild fluids; or when too severe, allayed by opium, according to the effects previously produced by the poison.

[Should there be great vomiting, with cramp in the stomach, abundant draughts of sugar and water, or simple water, must be administered. If the vomiting continues after the poison may be supposed to have been ejected, and the pain is increased, a grain of opium may be given, and repeated at an interval of a quarter of an hour for two or three times, if the symptoms are not calmed. If the individual who has taken the antimonial preparation does not vomit, and yet suffers from the other symptoms, several glasses of sugar and water should be taken; and if, in spite of this, vomiting does not occur, recourse should be had to astringents.]

The best antidotes are, decoctions of astringent vegetables, such as oak or willow bark, gall nuts, strong green tea, &c., which should be given freely for the purpose of diluting and decomposing the poison.

Tests.—Sulphureted hydrogen, and the hydrosulphurets, precipitate tartarized antimony, from its solution, of an orange or deep brownish red color; white, by sulphuric acid, alkalies, barytes or lime water. Alkaline and earthy neutral salts do not affect it; but salts with excess of acid do. Infusion of gall, occasions a copious whitish-yellow precipitate. The muriate of antimony is a dark, heavy fluid, to which, if water be added, a white precipitate is formed. The oxide is soluble in muriatic acid, by which the muriate is formed.

* * * All the preparations of antimony are readily reduced to the metallic state by calcination with charcoal and potash.

COPPER, AND ITS PREPARATIONS. (*Sulphate of copper, or blue vitriol; subacetate of copper, or verdigris. Food cooked in foul copper vessels, and pickles made green by copper.*)

Symptoms.—Acrid and coppery taste; tongue parched and dry; constriction of the throat and coppery eructations; severe vomitings, or fruitless efforts to vomit; dragging at the stomach; dreadful colic; frequent black bloody stools, with tenesmus: abdomen

distended; pulse small, hard, and quick; syncope; great thirst and anxiety; cold sweats, scanty urine; pain in the head, vertigo, cramps, convulsions, and death.

Treatment.—Large draughts of milk and water to encourage vomiting. Whites of eggs stirred up with water, and taken freely. Inflammation to be attacked as a general principle, and the nervous symptoms by anodynes and antispasmodics. Sugar, as first promulgated by Orfila, is not a specific, but it may be given advantageously with coffee.

Tests.—The salts of copper are mostly of a bright green or blue color, and are easily reduced to their metallic state by means of charcoal, at an elevated temperature. The sulphate of copper is partly decomposed by alkalies and alkaline earths. Potash precipitates a subsulphate of a green color from it.

If the salts of copper be dissolved in coffee, port wine, or malt liquors, which partly decompose them, they may be detected by adding a spirituous tincture of guaiacum, which will throw down a precipitate varying in shade from a greenish indigo to that of a pale green. Ammonia added to a solution of any cupreous salt, gives a blue or greenish precipitate, according to the quantity; but, if added in excess, it re-dissolves the precipitate, and forms a deep blue transparent solution.

LEAD, AND ITS PREPARATIONS; or fluids adulterated with lead.

Symptoms.—When lead has been taken in large quantity, a sugary astringent metallic taste is felt in the mouth; constriction of the throat; pain in the region of the stomach; obstinate, painful, and often bloody vomiting; hiccough; convulsions and death.

When taken in small long-continued doses, it produces painters' colic (*colica pictorum*,) and paralytic symptoms.

Treatment.—[It is well ascertained, that Glauber's salts, Epsom salts, and hard water, that is, water holding in solution sulphate of lime, are the best counterpoisons to the preparations of lead. If these remedies are not at hand, the patient may take elixir vitriol or a solution of sulphuric acid in water. These last should be sucked through a quill, in order to save the teeth.]

In addition to which, if symptoms suggest it, bleeding must be used; in conjunction with castor oil with or without opium, assisted by frequent emollient clysters to clean out the bowels. The warm bath may also be used.

Tests.—All the preparations of lead are easily reduced to their metallic state by calcination with charcoal.

The superacetate of lead (sugar of lead) dissolved in water is precipitated white by means of sulphuric acid; of a canary color by chromate of potash and chromic acid, both of which are easily reduced by calcination. The alkaline sulphurets precipitate the superacetate of lead of a black color.

MERCURY, AND ITS PREPARATIONS. (*Oxymuriate of mercury, or corrosive sublimate; nitric oxide of mercury, or red precipitate; sulphuret of mercury, or vermilion; mercurial ointment.*)

Symptoms.—Acrid metallic taste, thirst, fulness and burning at the throat; anxiety, teasing pains of the stomach and bowels; nausea and vomiting of various colored fluid, sometimes bloody; diarrhœa and *dysuria*, or difficulty of making water. Pulse quick; small, and hard: faintings, great debility, difficult breathing, cramp, cold sweats, insensibility, death.

Treatment.—Whites of eggs decompose corrosive sublimate. One mixed with water may be given every two or three minutes to promote vomiting, and to lessen the virulence of the poison; milk in large quantities, gum-water, or linseed tea, sugar and water, or water itself at about 80°. Gluten, as it exists in wheat-flour, also decomposes sublimate, and should be given mixed with water. Inflammation to be anticipated, and treated by the usual remedies.

Tests.—Mercurial preparations heated to a redness in a glass tube with potash, are decomposed; the quicksilver being volatilized. The oxymuriate or sublimate is precipitated white by ammonia; yellow by potash; and of an orange color by lime-water; By nitrate of tin, a copious dark brown precipitate is formed; and by albumen mixed with cold water, a flocculent one.

The red and nitric oxides may be dissolved in muriatic acid and converted into sublimate.

Vermilion is insoluble in water or muriatic acid; but is entirely volatilized by heat.

SILVER, NITRATE OF.—LUNAR-CAUSTIC.

Symptoms similar to those occasioned by other corrosive poisons.

Treatment.—A table spoonful of the muriate of soda (*common salt*) dissolved in a pint of water, and a wine-glassful to be taken every two minutes, to decompose the poison; after which mucilaginous drenches or purgatives may be administered.

Tests.—Nitrate of silver is precipitated white by muriate of

soda; yellow by phosphate and chromate of soda. If placed on burning coals, it animates them, leaving a coating of silver; calcined with charcoal and potash, the silver is reduced to its metallic state.

ZINC, SULPHATE OR OXYD OF.

Symptoms.—A sour taste, sense of choking, nausea, vomiting, pain in the stomach, frequent stools, difficult breathing, quickened pulse, face pale, cold extremities, but seldom death from the emetic qualities of the poison.

Treatment.—Vomiting is rendered easy by copious draughts of warm water, and particular symptoms to be opposed by appropriate remedies.

Tests.—Pure sulphate of zinc is precipitated white by potash and ammonia; yellowish white, by the alkaline hydrosulphurets; and of an orange color by the chromate of lead.—The oxide is readily reduced by calcination with charcoal and nitre.

ACIDS.—(*Sulphuric acids, or oil of vitriol. Nitric acid or aqua fortis. Muriatic acid, or spirit of salt. Oxalic acid, or acid of sugar. Phosphoric, Fluoric, Tartaric, Prussic.*)

General symptoms.—Acid burning taste in the mouth, acute pain in the throat, stomach, and bowels, frequent vomiting of bloody fluid, which effervesces with chalk, or alkaline carbonates, and reddens litmus paper; hiccough; copious stools, more or less bloody; tenderness of the abdomen; difficult breathing; irregular pulse; excessive thirst; drink increasing the pain, and seldom staying down; frequent but vain efforts to make water; cold sweats; altered countenance; convulsions; death.

Treatment.—Mix an ounce of calcined magnesia with a quart of water, and give a wine-glassful every two minutes. Soap-suds or chalk and water may be used till magnesia be procured. Vomiting to be excited by tickling the throat with a feather. Diluents to be taken after the poison is neutralized or ejected. Inflammations and other consequences to be treated in the ordinary way.

If the sulphuric acid, vulgarly called the oil of vitriol has been swallowed, water alone should not be given, nor should calcined magnesia with water be given: but the common carbonate of magnesia may be given freely when mixed with water. If these

precautions be not observed there is too much heat generated in the stomach.

If oxalic acid has been taken, lime, or chalk and water, are preferable to magnesia.

If Prussic acid* has been taken, emetics are to be administered with as little delay as possible, and after their operation, oil of turpentine, ammonia, brandy, and other stimulants capable of rousing the system, should be perseveringly employed with warmth, friction, and blisters.

Tests.—Sulphuric acid is known by its great weight, by its evolving heat when mixed with water; by emitting no fumes. If barytes be added to it, a sulphate is formed, (sulphate of barytes,) which is insoluble in water or nitric acid.

Nitric acids emits orange colored fumes upon adding copper to it, by which it is changed blue. If potash be added to it, a nitrate is formed (nitrate of potash) which deflagrates when thrown on burning coals. It tinges the skin yellow.

Muriatic acid emits pungent fumes. If nitrate of silver be added to it, a very white precipitate is formed of muriate of silver, soluble in ammonia, but not in nitric acid.

Oxalic acid precipitates lime and all its salts from water; the precipitate being soluble in nitric, but not in an excess of oxalic acid. Exposed to heat it volatilizes, leaving but a little residue. It is decomposed by sulphuric acid, becoming brown; it is dissolved by heat and nitric acid, and rendered yellow. Muriatic acid dissolves and decomposes it with heat. Oxalic acid also turns it to a light-brown red.

Phosphoric acid precipitates barytes and lime-water; the precipitate being soluble in nitric acid. It is decomposed by charcoal at a high temperature, evolving carbonic acid, and phosphorus being sublimed.

Fluoric acid exhales white vapors, not dissimilar to those of muriatic acid; heat is evolved with a hissing noise when water is added to it: it dissolves glass.

Tartaric acid produces a precipitate from lime-water, soluble in an excess of acid, and in nitric also; with potash it forms a *neutral* and *supersalt*. It does not precipitate solution of silver, but its salts do.

Prussic acid has a strong odor of bitter almonds, and is contained

*Prussic acid is the most violent of poisons, producing almost instant death when applied even in small quantities to the surface of the body.

in that fruit, and in the leaves of the peach and the laurel; it is soluble in alcohol, but hardly in water, and is precipitated in its solution by nitrate of silver.

ALKALIES.—(*Potash, Soda, Ammonia.*)

Symptoms.—The symptoms of having swallowed an alkali in excess are, an acid, urinous, and acrid taste in the mouth, great heat in the throat, nausea and vomiting of bloody matter, which changes syrup of violets to green, and effervesces with acids, if the *carbonated* form of the acid has been taken; copious stools; acute pain of the stomach, colic, convulsions, death.

Treatment.—Give vinegar and other vegetable acids largely, to neutralize the alkali; and treat the concomitant symptoms upon general principles.

Tests.—Alkalies have many properties in common; their solutions feel soapy; they change vegetable blues to green, yellow to brown; and remain transparent when carbonic acid is added to them, which serves to distinguish them from the alkaline earths, barytes, strontium, and lime. Nitrate of silver is precipitated by them in form of a dark colored oxide, soluble in nitric acid.

* * Potash and soda may be distinguished from each other by evaporating their solutions to dryness; potash will become moist by absorbing water from the atmosphere, while soda will remain dry. Ammonia is known by its pungent smell.

ALKALINE EARTHS.—(*Lime, Barytes, Pure Barytes, Carbonate and Muriate of.*)

Symptoms.—Violent vomitings, convulsions, palsy of the limbs, distressing pains in the abdomen, hiccough, alteration of the countenance, and very early death.

Treatment.—If lime has been taken, vinegar and other vegetable acids are the best antidotes.

If barytes, in any of its forms has been swallowed, a weak solution of Epsom or Glauber's salt should be copiously drank, to produce vomiting, and, at the same time, to decompose the poison, which it renders inert, by forming an insoluble sulphate. Till either of the above salts can be obtained, large draughts of water alone, or made slightly sour by sulphuric acid, may be freely drank.

Tests.—Solution of lime changes vegetable blues to green, and is precipitated white by carbonic and oxalic acid, while no change

is produced on it by sulphuric acid; its salts are decomposed by the fixed alkalies, which precipitate the lime, but not the ammonia.

Pure barytes undergoes similar changes to lime when water is added to it, and acts like it on vegetable colors. It does not effervesce with acids. Sulphuric acids, and all the sulphates added to a solution of it, produce a white precipitate, insoluble in water and nitric acid. Carbonate of barytes is insoluble in water, but dissolves in nitric and muriatic acid in a state of effervescence. Muriate of barytes dissolved in water, is not changed by pure ammonia, but its carbonates, as well as all other alkaline carbonates, throw down a white precipitate, which is carbonate of barytes.

NITRE.—(*Salt-petre; Nitras Potassæ.*)

Symptoms.—Cardialgia, nausea, painful vomiting, purging, convulsions, syncope, with feeble pulse, cold extremities, teasing pains of the stomach and bowels; difficulty of breathing; a species of intoxication; and often death.

Treatment.—Similar to that of arsenic, only that lime is not to be used.

VEGETABLE POISONS.

ALL vegetable poisons act upon the nervous system. Those of an irritating nature are *Monkshood, Meadow Saffron, Mezereon, Bear's Foot, Hemlock Dropwort, Water Hemlock, Wall-Pepper, &c.* The general symptoms they produce when taken are, an acrid pungent taste, with more or less bitterness, excessive heat, great dryness of the mouth and throat, accompanied with a sense of tightness there; violent vomiting, and the efforts continued even after the stomach is emptied; purging, with great pain in the stomach and bowels; pulse strong, frequent, and regular; breathing often quick and difficult: appearance of intoxication; the pupil of the eye frequently dilated; insensibility, resembling death; the pulse becomes slow and loses its force, until death closes the scene.

Externally applied, many of the vegetable poisons produce violent inflammation of the skin, with vesications, or pustulary eruptions.

Treatment.—If vomiting has been occasioned by the poison, and the efforts are still continued, they may be rendered easier by swallowing copious draughts of warm water, or thin gruel; but should insensibility have come on without vomiting, it ought im-

mediately to be excited by some powerful emetic, as the sulphate of zinc, (twenty grains dissolved in half a tea-cupful of water) or sulphate of copper, from ten to fifteen grains; after the operation of which, a brisk purgative should be given, and emollient or stimulating clysters administered, as the urgency of the case may require.

A preferable, and more expeditious mode, provided it can readily be procured, of dislodging the poison, mineral or vegetable, is the stomach-pump; as this, however, requires some anatomical knowledge, a medical practitioner, having one of these valuable machines in his possession, should be instantly sent for, in the mean time either of the preceding emetics being given.

After as much as possible of the poison is dislodged, either by emetics or other means, a very strong infusion of coffee, or vinegar diluted with water, may be then given with advantage.* Camphor-mixture, with ether (two ounces of the former to half a drachm of the latter), may be taken frequently; and should the insensibility increase, warmth, friction, and blisters may be employed. If inflammation, or other dangerous consequences have arisen, these must be treated accordingly.

NARCOTIC POISONS.

Among the narcotic poisons are enumerated the following:—*Deadly Nightshade, Hemlock, Foxglove, Henbane, Tobacco, Opium, Woody Nightshade,*† &c. The general symptoms of these, when taken into the stomach or applied to a wound, produce the following effects, viz: stupor, numbness, heaviness in the head, desire to vomit, at first slight, but afterwards insupportable; a sort of intoxication, stupid air, the pupil of the eye dilated, furious or lively delirium, sometimes pain, convulsions of different parts of the body, or palsy of the limbs. The pulse is variable, but at first generally strong and full; the breathing is quick, and there is great anxiety and dejection, which, if not speedily relieved, soon terminates in death.

Treatment.—In the treatment of persons laboring under the

* The fruit of the *Fewillea cordifolia* has latterly been recommended as a powerful antidote against vegetable poisons; and is directed to be used in as recent a state as possible.

† All plants whose flowers have five stamens, one pistil, one petal, and whose fruit is of the berry kind, may at once be pronounced poisonous. The umbelliferous plants which grow in *water*, are mostly poisonous; and such as have the corolla purple and yellow, may be suspected to be so.

influence of narcotic poison, the principal attention should be directed to rouse the sensibility of the system, so as to render the stomach susceptible to the irritation of emetics, and the action of other stimulants. Late experience has proved that the best mode of effecting this is by repeatedly dashing cold water over the head and neck, whilst the other parts of the body are kept warm and dry. Applying the solution of ammonia to the nostrils by means of a feather, introducing a drop or two of the spirit of hartshorn into each eye, sprinkling cowhage over the neck, breast, and hands, and applying a mustard plaster over the seat of the stomach, have been attended with good effects. The best form of an emetic, in these cases, is the subjoined draught.* Should this, however, fail, from ten to twenty grains of the sulphate of zinc, should be introduced into the stomach every quarter of an hour, and vomiting excited and assisted by irritating the fauces with the finger, or the end of a feather. Large and strong clysters of soap, dissolved in water, or of thin gruel, into which a table-spoonful of salt may be put, should be speedily administered, to clear the bowels, and to assist in getting the poison dislodged, giving active purgatives after the poison has ceased; after which the strong coffee and diluted vinegar and water may be given, as above directed. If by these means the stupor and drowsiness, which is sometimes extreme, and the insensibility bordering on apoplexy, be not remedied, blood may be taken from the jugular vein, blisters applied to the neck and legs, and the sensibility roused by every possible means. If the heat of the body decline, warmth and friction must be perseveringly used to restore it. Vegetable acids are on no account to be given before the poison is expelled; and it is even desirable that as little fluid as possible, of any description, should be given. The stomach-pump, if it can be procured and adopted without loss of time, should precede these means, as the most effective in dislodging the poison.

POISONOUS MUSHROOMS.

AMONG these are the *Pepper Agaric*, *Deadly Agaric*, and *Champignon*, which are frequently mistaken for the edible mush-

• Take	Subcarbonate of Ammonia,	1 scruple.
	Ipecacuanha Powder,	$\frac{1}{2}$ drachm.
	Tincture of Capsicum,	2 drachms.
	Peppermint water,	3 ounces.

Mix for an emetic; to be taken immediately.

room.* The symptoms they produce are nausea, heat and pain in the stomach and bowels, with vomiting and purging; thirst, convulsions, and faintings; small and frequent pulse; delirium, dilated pupil, stupor, cold sweats, and often death.

Treatment.—In the first place, when any of the above symptoms arise, after eating mushrooms, an emetic of tartarized antimony, followed by frequent doses of Glauber or Epsom salts, and large stimulating clysters are to be speedily administered. After the contents of the stomach are thoroughly evacuated, ether may be given in small quantities of brandy and water; but should inflammatory symptoms supervene, these and other stimuli must be laid aside, and means accordingly adopted to combat them. See MINERAL POISONS.

POISONOUS FISH.

OF this class are the *Yellow-billed Sprat*, *Sea Lobster*, *Land Crab*, *Conger Eel*, *Muscle*, *Rock Fish*, &c. In an hour or two after eating stale fish, or often in much less time, a sense of weight at the stomach comes on, with slight vertigo and headache, heat about the head and eyes, and considerable thirst; often an eruption of the skin similar to what is called the nettle rash; and, in some instances, death has been the consequence.

Treatment.—An emetic should be taken as soon as any of the preceding symptoms, after eating any of the above fish, begin to manifest themselves; and where it cannot readily be procured, vomiting may be excited by tickling the throat with the finger, and taking large draughts of warm water. After full vomiting, an active purgative should be given to remove any of the noxious matter that may have found its way into the intestines. Vinegar and water may be drank after the operation of these remedies, with which also the body may be sponged. Water made very sweet with sugar, to which some ether may be added, may be drank freely as a corrective; and a very weak solution of alkali may be given to obviate the effects produced by the poison. If spasms

* Poisonous mushrooms may be distinguished from such as are eatable, by attending to their botanical characters; and by the following remarks: Poisonous mushrooms grow in wet shady places; they have a nauseous smell, are softer, more open and porous than the edible ones. They have also a dirty-looking surface, sometimes a gaudy color, or many very distinct hues, particularly if they have been covered with an envelope. They have soft bulbous stalks, grow rapidly, and very soon corrupt.

come on after the evacuations, large doses of the tincture of opium are necessary. If inflammation arise, the usual means of removing it must be employed. See ANIMAL POISON.

HYDROPHOBIA.

THE disease is most frequent after long, dry, hot seasons; and such dogs as live upon putrid flesh, without having enough of fresh water, are most liable to it.

When any person has been bit by a dog, the strictest inquiry ought to be made whether the animal was really mad. Many disagreeable consequences arise from neglecting to ascertain this point. Some people have lived in continual anxiety for many years, because they had been bit by a dog which they believed to be mad; but, as he had been killed on the spot, it was impossible to ascertain the fact. This should induce us, instead of killing a dog the moment he has bit any person, to do all in our power to keep him alive, at least till we can ascertain whether he be mad or not.

The poison of hydrophobia is generally communicated by a wound, which nevertheless heals as soon as a common wound.

Symptoms.—At an uncertain interval after the bite, generally, however, between the twentieth day and three or four months, pain or uneasiness occurs in the bitten part, though the wound may have been long healed.

Anxiety, languor, spasms, horror, disturbed sleep, difficult respiration, succeed, and are soon very much increased; violent convulsions affect the whole body, hideously distorting the muscles of the face; the eyes are red and protruded; the tongue swells, and often hangs out, and viscid saliva flows from the mouth; there is pain in the stomach, with bilious vomitings, a horror of fluids, and impossibility of drinking them. All these symptoms are aggravated till the sufferer is relieved by death.

Treatment.—The common notion, that this poison may lie in the body for many years, and afterwards prove fatal, is both hurtful and ridiculous. It must render such persons as have had the misfortune to be bit very unhappy, and can have no good effects. If the person takes proper medicines for forty days after the time of his being bit, and feels no symptoms of the disease, there is reason to believe him out of danger. Some have indeed gone mad twelve months after being bit, but seldom later.

It is now well known that hydrophobia is more easily prevented than cured; in fine, it is very doubtful if ever it has been cured.

Mercury, arsenic, opium, musk, camphor, acids, wines, vegetable and mineral alkali, oil, various herbs, and many other articles, whose effects are diametrically opposite, have been employed without benefit. Large blood-lettings, injecting water into the veins, warm and cold bath, in short, every thing that could possibly be suggested as a remedial agent, have been adopted with no better success.

To ensure effectually the person bitten by a mad dog against the consequences, it is strongly recommended, immediately or as soon after the accident as possible, to have the bitten part completely cut out; after which bleeding should be promoted by warm fomentations, and a cupping-glass applied over the part, until it give evident marks of its exhausting power. On the removal of this glass the wound is to be washed frequently with a weak solution of muriatic acid (forty drops to a pint of water,) and a piece of lint, or rag, moistened in the same, left on the part, and renewed as it becomes dry. Should some degree of inflammation ensue, as most likely will be the case, the solution may then be laid aside, the wound dressed with dry lint, and a copious suppuration promoted by means of warm poultices, healing afterwards the wound in the usual way.

During this treatment the patient must take two of the following pills at bed-time* every night, for three weeks or a month after the accident.

No other plan can ensure safety.

After all that has been said, and the little confidence assigned to any practice but that of early cutting out or cauterizing the part, it is nevertheless always necessary that something should be done after the actual commencement of the symptoms of hydrophobia, and every practitioner should be prepared for the adoption of some mode of treatment or other. A modern writer observes, "that experience authorises the placing confidence in bleeding till the patient faints; on vomiting; and, perhaps, on the use of the deadly nightshade; and on tobacco exhibited as a clyster. It is probable advantage would result from the combined employment of bleeding and vomiting, and purging in the early stage of the disease. Analogy recommends the trial of the oil of turpentine in the convulsive stage of the disease; but unfortunately, when once the hydrophobic symptoms have commenced, there is little or no hope

* Take	Mercurial Pill,	1 drachm.
	Powdered Rhubarb,	2 scruples.
	Extract of Hemlock,	10 grains.
Make 20 pills, to be taken as above		

of saving the patient, the disease having almost invariably baffled every plan of treatment which the united talents of numerous medical generations have suggested. All the most powerful means of every class have been tried over and over again; happily, however, surgery possesses tolerably certain means of preventing hydrophobia, which ought not to be delayed after the accident, viz. that of cutting out effectually the bitten parts. How late this operation may be performed with a prospect of utility, we are not at present prepared to say; but there are practitioners who deem the practice right, even when heat, irritation, or inflammation is observed in the bitten part.*

The next poisonous animal which we shall mention is the VIPER. The grease of this animal rubbed into the wound, is said to cure the bite. Though that is all the viper-catchers generally do when bit, we should not think it sufficient for the bite of an enraged viper. It would surely be more safe to have the wound well sucked,† and afterwards rubbed with warm salad-oil. A poultice of bread and milk, softened with salad-oil, should likewise be applied to the wound; and the patient ought to drink freely of vinegar-whey, or water-gruel with vinegar in it, to make him sweat. Vinegar is one of the best medicines which can be used in this kind of poison, and ought to be taken very liberally. If the patient be sick, he may take a vomit. This course will be sufficient to cure the bite of any of the poisonous animals of this country.

With regard to poisonous insects, as the bee, the wasp, the hornet, &c.; their stings are seldom attended with danger, unless when a person happens to be stung by a great number of them at the same time; in which case something should be done to abate the inflammation and swelling. Some, for this purpose, apply honey; others lay pounded parsley to the part. A mixture of vinegar and Venice turpentine is likewise recommended; but I have found rubbing the part with warm salad-oil, or frequently repeated applications of pledgets dipped in laudanum, succeed very well. In-

* See Medical Repository, vol. 3. p. 54.

† The practice of sucking out poisons is very ancient; and indeed nothing can be more rational. Where the bite cannot be cut out, this is the most likely way for extracting the poison. There can be no danger in performing this office, as the poison does no harm, unless it be taken into the body by a wound. The person who sucks the wound ought, however, to wash his mouth frequently with salad-oil, which will secure him from even the least inconveniency. The *Psylli* in Africa and the *Marsi* in Italy, were famed for curing the bites of poisonous animals, by sucking the wound; and we are told, that the Indians practice the same at this day.

deed, when the stings are so numerous as to endanger the patient's life, which is sometimes the case, he must not only have oily poultices, or pledgets moistened with laudanum applied to the part, but should likewise be bled, and take some cooling medicines, as nitre, or cream of tartar, and should drink plentifully of diluting liquors.

Poisonous vegetables abound everywhere, and prove often fatal to the ignorant and unwary. This indeed is chiefly owing to carelessness. Children ought early to be cautioned against eating any kind of fruit, roots, or berries, which they do not know; and all poisonous plants to which they can have access, ought, as far as possible, to be destroyed. This would not be so difficult a task as some people imagine.

Poisonous plants have no doubt their use, and they ought to be propagated in proper places; but, as they often prove destructive to cattle, they should be rooted out of all pasture grounds. They ought likewise, for the safety of the human species, to be destroyed in the neighborhood of all towns and villages; which, by the bye, are the places where they most commonly abound. I have seen the poisonous hemlock, henbane, wolfsbane, and deadly-nightshade, all growing within the *environs* of a small town, where, though several persons, within the memory of those living in it, had lost their lives by one or other of these plants, yet no method, that I could hear of, had ever been taken to root them out; though this might be done at a very trifling expense.

Seldom a year passes, but we have accounts of several persons poisoned by eating hemlock-roots instead of parsnips, or some kinds of fungus which they had gathered for mushrooms. These examples ought to put people upon their guard with respect to the former, and to put the latter out of use. Mushrooms may be a delicate dish; but they are a dangerous one, as they are generally gathered by persons who do not know one kind of fungus from another, and take every thing for a mushroom which has that appearance.

It may not be amiss, to observe, that an effectual remedy is now said to be found for the bite of the rattlesnake. The prescription is as follows :—Take of the herbs plantain and horehound, in summer, roots and branches together, a sufficient quantity: bruise them in a mortar, and squeeze out the juice; of which give, as soon as possible, one large spoonful: if the patient be swelled, you must force it down his throat. This generally will cure; but, if he finds no relief in an hour after, you may give another spoonful, which never fails. If the roots are dried, they must be mois-

tened with a little water. To the wound may be applied a leaf of good tobacco moistened with rum.

[Professor Caldwell states, that, some years since, two individuals brought a great number of rattlesnakes to Philadelphia, for the purpose of exhibition. They first allowed the snakes to bite inferior animals, and then themselves. After being bitten, they immediately retired from the room, and after a few minutes returned cured. The bite of the snake was fatal to cats, puppies, and chickens, in every instance. On one occasion, one of the keepers was bit by a snake which had not expended its poison on an inferior animal. He cured himself by the use of the *hieracium venosum*, commonly known by the names of "hawkweed," "adder's tongue," and "poor robin's plantain." He chewed the weed and swallowed the juice, and also applied it to the bitten part. He likewise tied a bandage around the arm, above the point where the poison was inserted.]

It is possible there may be in nature specific remedies for every kind of poison; but as we have very little faith in any of those which have yet been pretended to be discovered, we shall beg leave again to recommend the most strict attention to the following rules, *viz.* That when any poisonous substance has been taken into the stomach, it ought, as soon as possible, to be discharged by vomits, clysters, and purges; and, when poison has been received into the body by a wound, that it be expelled by medicines which promote the different secretions, especially those of perspiration and urine; to which may be added antispasmodics, or such medicines as take off tension and irritation; the chief of which are opium, musk, camphor, and asafœtida.

PART III.

OF SURGERY.

To describe all the operations of surgery, and to point out the different diseases in which these operations are necessary, would extend this article far beyond the limits allotted to it; we must therefore confine our observations to such cases as most generally occur, and in which proper assistance is either not asked, or not always to be obtained.

Though an acquaintance with the structure of the human body is indispensably necessary to qualify a man for being an expert surgeon; yet many things may be done to save the lives of their fellow-men in emergencies by those who are not adepts in anatomy. It is amazing with what facility the farmers daily perform operations upon brute animals, which are not of a less difficult nature than those performed on the human species; yet they seldom fail of success.

Indeed every man is in some measure a surgeon, whether he will or not. He feels an inclination to assist his fellow-men in distress, and accidents happen every hour, which give occasion to exercise this feeling. The feelings of the heart, however, when not directed by the judgment, are apt to mislead. Thus one, by a rash attempt to save his friend, may sometimes destroy him; while another, for fear of doing amiss, stands still and sees his bosom-friend expire, without so much as attempting to relieve him, even when the means are in his power. As every good man would wish to steer a course different from either of these, it will no doubt be agreeable to him to know what ought to be done upon such emergencies.

BLEEDING.

No operation of surgery is so frequently necessary as bleeding; it ought therefore to be very generally understood. But though practised by midwives, gardeners, blacksmiths, barbers, and tooth-drawers, we have reason to believe that very few know when it is proper. Even physicians themselves have been so much the dupes of theory with regard to bleeding, as to render it the subject of ridicule. It is, however, an operation of great importance, and must, when seasonably and properly performed, be of singular service to those in distress.

Bleeding is proper at the beginning of all inflammatory fevers, as pleurisies, peripneumonies, &c. It is likewise proper in all topical inflammations, as those of the intestines, womb, bladder, stomach, kidneys, throat, and eyes; as also in the asthma in certain cases, head-aches, acute rheumatism, apoplexy, epilepsy, and bloody flux under certain states. After falls, blows, bruises, or any violent hurt received either externally, or internally, bleeding is necessary. It is likewise necessary for persons who have had the misfortune to be strangled, drowned, suffocated with foul air, the fumes of metal, or the like. In a word, whenever the vital motions have been suddenly stopped from any cause whatever, except in swoonings occasioned by mere weakness or hysteric affections, it is proper to open a vein. But in all disorders proceeding from relaxation of the solids, and an impoverished state of the blood, bleeding is improper.

Bleeding for topical inflammations ought always to be performed as near the part affected as possible. When this can be done with a lancet, it is to be preferred to any other method; but where a vein cannot be found, recourse must be had to leeches, or cupping.

The quantity of blood to be taken away must always be regulated by the strength, age, constitution, manner of life, and other circumstances relating to the patient. It would be ridiculous to suppose that a child could bear to lose as much blood as a grown person, or that a delicate lady should be bled to the same extent as a robust man.

The mode of bleeding most frequently practised, is that of opening a vein; and it may be done in the arm, ankle, jugular vein, frontal vein, veins under the tongue, and on the back of the hand. In whatever part, however, venesection is performed, a bandage

must be applied between that part and the heart. As it is often necessary, in order to raise the vein, to make the bandage pretty tight, it will be proper in such cases, as soon as the blood begins to flow, to slacken it a little. The bandage ought to be applied at least an inch, or an inch and a half from the place where the puncture is intended to be made. Thus, the return of the blood through the vein is stopped, the vein swells, becomes conspicuous, and when opened, bleeds much more freely than would otherwise happen.

Persons not skilled in anatomy ought never to bleed with the lancet in a vein that lies over an artery or a tendon, if they can avoid it.* The former may easily be known from its pulsation or beating, and the latter from its feeling hard or tight like a whipcord under the finger.

It was formerly a rule, even among those who had the character of being regular practitioners, to bleed their patients in certain diseases till they fainted. Surely a more ridiculous rule could not be proposed. One person will faint at the very sight of a lancet, while another will lose almost the whole blood of his body before he faints. Swooning depends more upon the state of the mind than of the body: besides it may often be occasioned or prevented by the manner in which the operation is performed.

Children are generally bled with leeches. This, though sometimes necessary, is a very troublesome and uncertain practice. It is impossible to know what quantity of blood is taken away by leeches; besides, the bleeding is often very difficult to stop, and the wounds are not easily healed. Would those who practise bleeding take a little more pains, and accustom themselves to bleed children, they would not find it such a difficult operation as they imagine.

Certain prejudices with regard to bleeding still prevail among the people. They talk, for instance, of head-veins, heart-veins, breast-veins, &c. and believe that bleeding in these will certainly cure all diseases of the parts whence they are supposed to come, without considering that all the blood-vessels arise from the heart, and return to it again; for which reason, unless in topical inflammations, it signifies very little from what part of the body blood is taken. But this, though a foolish prejudice, is not near so hurtful as the notion that the first bleeding will perform wonders. This belief makes them often postpone the operation when necessary,

* Persons not skilled in anatomy ought never to bleed at all. The risk is greater than the benefit; as the advantage to be derived from such a step must depend on practical knowledge.—Ed.

in order to reserve it for some more important occasion, and, when they think themselves in extreme danger, they fly to it for relief, whether it be proper or not. Bleeding at certain stated periods or seasons has likewise bad effects.

It is a common notion that bleeding in the feet draws the humors downwards, and consequently cures diseases of the head and other superior parts; but we have already observed that, in all topical affections, the blood ought to be drawn as near the part as possible. When it is necessary, however, to bleed in the foot or hand, as the veins are small, and the bleeding is apt to stop too soon, the part ought to be immersed in warm water, and kept there till a sufficient quantity of blood be let.

All the apparatus essential for blood-letting, on the part of the patient, is a bandage or fillet, two or more small pieces of folded linen for compresses, a bason to receive the blood, and a little clean water and a towel. The bandage ought to be about a yard in length, and near two inches broad, a common ribbon or garter being frequently employed. The compresses are made by doubling a bit of linen rag about two inches square. On the part of the surgeon, it is necessary for him to have a good lancet, of proper shape; for if the shoulders of the lancet be too broad, it will not readily enter the vein, and when it does enter, it invariably makes a large opening, which is not always desirable. If the lancet be too spear-pointed, an incautious operator would often run a risk of transfixing the vein, and wounding the artery beneath it. More, however, depends on the mode of introducing the lancet than on its shape.

During the operation of bleeding, the patient may lie down, sit down, or stand up, each of which positions may be chosen, as circumstances may require. If the patient be apt to faint from the loss of a small quantity of blood, and such fainting can answer no surgical purpose, it is best to bleed him in a recumbent posture. But when the patient is strong and vigorous, there is little occasion for this precaution, and a sitting posture is to be preferred, as the most convenient, both for the surgeon and patient.

At the bend of the arm, there are several veins in which a puncture may be made, viz. the basilic, cephalic, median basilic, and median cephalic. The median basilic vein being usually the largest and most conspicuous, is that in which the operation is mostly performed; but it should never be forgotten, that it is under this vessel that the brachial artery runs, with the mere intervention of the thin aponeurotic sheath, sent off by the biceps muscle. In

very thin persons, indeed, the medial basilic vein lies almost close to the artery, and nothing is then more easy than to transfix the first of these vessels and wound the last.

In fat subjects, the large veins at the bend of the arm are sometimes totally imperceptible, notwithstanding the fillet is tightly applied, the limb is put in warm water, and every thing done to make those vessels as turgid as possible. Under these circumstances, if the surgeon has not had much experience in the practice of venesection, he will do well to be content with opening one of the veins of the back of the hand, after putting the member for sometime in warm water and applying a ligature round the wrist.

In children, a sufficient quantity of blood cannot always be obtained by venesection, and, in this event, the free application of leeches, and, occasionally, the puncture of the temporal artery, are the only effectual methods.

One of the most common ill consequences of bleeding in the arm is a thrombus, or ecchymosis; that is, a small tumor around the orifice, occasioned by the blood insinuating itself into the adjoining cellular substance, at the time this fluid is escaping from the vein. Changing the posture of the arm will frequently hinder the thrombus from increasing in size, so as to obstruct the evacuation of blood. The best applications for promoting the absorption of these tumors, are those containing spirit, vinegar, or muriate of ammonia. Compresses wetted with any lotion of this sort, may be advantageously put on the swelling, and confined there with a slack bandage.

The integuments and subjacent cellular substance, the absorbents, the vein, &c. are all liable to inflammation, in consequence of bleeding, a nerve also may be wounded, all requiring proper surgical treatment.

TOPICAL BLOOD-LETTING.

THIS is performed either by means of a scarificator and cupping-glass, or leeches, or by dividing the visibly distended vessels with a lancet, as is frequently done in cases of inflammation of the eye.

INFLAMMATION AND ABSCESS.

FROM whatever cause inflammation proceeds, it must terminate either by dispersion, suppuration, or gangrene. Though it is impossible to foretel with certainty in which of these ways any par-

ticular inflammation will terminate, yet a probable conjecture may be formed with regard to the event, from a knowledge of the patient's age and constitution. Inflammations happening in a slight degree upon colds, and without any previous indisposition, will most probably be dispersed; those which follow close upon a fever, or happen to persons of a gross habit of body, will generally suppurate; and those which attack very old people, or persons of a dropsical habit, will have a strong tendency to gangrene.

If the inflammation be slight, and the constitution sound, the dispersion ought always to be attempted. This will be best promoted by a slender diluting diet, plentiful bleeding, and repeated purges. The part itself must be fomented, and, if the skin be very tense, it may be embrocated with a mixture of three-fourths of sweet oil, and one-fourth of vinegar, and afterwards covered with a piece of wax-plaster.

If, notwithstanding these applications, the symptomatic fever increases, and the tumor becomes larger, with violent pain and pulsation, it will be proper to promote the suppuration. The best application for this purpose is a soft poultice, which may be renewed twice a-day. If the suppuration proceeds but slowly, a raw onion cut small or bruised may be spread upon the poultice. When the abscess is ripe or fit for opening, which may easily be known from the thinness of the skin in the most prominent part of it, fluctuation of matter, which may be felt under the finger, and, generally speaking, an abatement of the pain, it may be opened, either with a lancet, or by means of caustic.

The last way in which an inflammation terminates is in a gangrene or mortification, the approach of which may be known by the following symptoms:—The inflammation loses its redness, and becomes duskish or livid; the tension of the skin goes off, and it feels flabby; little bladders filled with ichor of different colors spread all over it; the tumor subsides, and from a duskish complexion becomes black; a quick low pulse, with cold clammy sweats, are the immediate forerunners of death.

When these symptoms first appear, the part ought to be dressed with London treacle, or a cataplasm made of lixivium and bran. Should the symptoms become worse, the part must be scarified, and afterwards dressed with basilicon softened with oil of turpentine. All the dressings must be applied warm. With regard to internal medicines, the patient must be supported with generous cordials, and the Peruvian bark exhibited in as large doses as the stomach will bear it. If the mortified parts should separate, the

wound will become a common ulcer; and must be treated accordingly.

This article includes the treatment of all those diseases, which, in different parts of the country, go by the names of *biles*, *imposthumes*, *whitloes*,* &c. They are all abscesses in consequence of a previous inflammation, which, if possible, ought to be discussed; but, when this cannot be done, the suppuration should be promoted, and the matter discharged by an incision, if necessary; afterwards, the sore may be dressed with yellow basilicum, or some other digestive ointment.

WOUNDS.

No part of medicine has been more mistaken than the treatment or cure of wounds. Mankind in general believe that certain herbs, ointments, and plasters, are possessed of wonderful healing powers, and imagine that no one can be cured without the application of them. It is, however, a fact, that no external application whatever contributes towards the cure of a wound, in any other way than by keeping the parts soft, clean, and defending them from the external air, which may be as effectually done by dry lint, as by the most pompous applications, while it is exempt from many of the bad consequences attending them.

The same observation holds with respect to internal applications. These only promote the cure of wounds as far as they tend to prevent a fever, or to remove any cause that might obstruct or impede the operations of nature. It is nature alone that cures wounds. All that art can do is to remove obstacles, and to put the parts in such a condition as is the most favorable to her efforts.

With this simple view we shall consider the treatment of wounds, and endeavor to point out such steps as ought to be taken to facilitate their cure.

* A whitloe is a very painful complaint. It is generally caused by a small quantity of purulent matter lodged very deep and compressed by the hard unyielding skin covering the finger. The pain may be instantly relieved by making a pretty deep incision with a lancet. The skin should also be rather freely divided, which will prevent the compression of the fungous flesh that is frequently thrown out from a whitloe, and which, when girt by the skin, occasions great pain. The wound should be dressed with a little Peruvian balsam spread on lint. An incipient whitloe may occasionally be dispersed by immersing the part in water as hot as it can be borne.

The first thing to be done when a person has received a wound, is to examine whether any foreign body be lodged in it, as wood, stone, iron, lead, glass, dirt, bits of cloth, or the like. These, if possible, ought to be extracted, and the wound cleaned before any dressings be applied. When that cannot be effected with safety, on account of the patient's weakness or loss of blood, they must be suffered to remain in the wound, and afterwards extracted when he is more able to bear it.

When a wound penetrates into any of the cavities of the body, as the breast, the bowels, &c., or where any considerable blood-vessel is cut, a skilful surgeon ought immediately to be called, otherwise the patient may lose his life. But sometimes the discharge of blood is so great, that if it be not stopped, the patient may die, even before a surgeon, though at no great distance, can arrive. In this case, something must be done by those who are present. If the wound be in any of the limbs, the bleeding may generally be stopped by applying a tight ligature or bandage round the member, a little above the wound. The best method of doing this is to put a strong broad garter round the part, but so slack as easily to admit a small piece of stick to be put under it, which must be twisted, in the same manner as a countryman does a cart-rope to secure his loading, till the bleeding stops. Whenever this is the case, he must take care to twist it no longer, as straining it too much might occasion an inflammation of the parts, and endanger a gangrene.

In parts where this bandage cannot be applied, various other methods may be tried to stop the bleeding, as the application of styptics, astringents, &c. Cloths dipped in a solution of blue vitriol in water, or the *styptic water* of the dispensatories, may be applied to the wound. When these cannot be obtained, strong spirits of wine may be used. Some recommend the *agaric** of

* Dr. Tissot, in his *Advice to the People*, gives the following directions for gathering, preparing, and applying the agaric:—"Gather in autumn," says he, "while the fine weather lasts, the agaric of the oak, which is a kind of fungus or excrescence issuing from the wood of that tree. It consists at first of four parts, which present themselves successively: 1. The outward rind or skin, which may be thrown away. 2. The part immediately under this rind, which is the best of all. This is to be beat well with a hammer, till it becomes soft and very pliable. This is the only preparation it requires, and a slice of it of a proper size is to be applied directly over the bursting open blood-vessels. It constricts and brings them close together, stops the bleeding, and generally falls off at the end of two days. 3. The third part adhering to the second, may serve to stop the bleeding from the smaller vessels; and the fourth and last part may be reduced to powder, as conducing to the same purpose."—Where the agaric cannot be had, sponge may be used in its stead. It must be applied in the same manner, and has nearly the same effects.

the oak as preferable to any of the other styptics; and indeed it deserves considerable encomiums. It is easily obtained, and ought to be kept in every family, in case of accidents. A piece of it must be laid upon the wound, and covered with a good deal of lint, above which a bandage may be applied so tight as to keep it firmly on.

Though spirits, tinctures, and hot balsams, may be used, in order to stop the bleeding from small vessels when it is excessive, they are improper at other times. They do not promote, but retard the cure, and often change a simple wound into an ulcer. People imagine, because hot balsams congeal the blood, and seem, as it were, to solder up the wound, that they therefore heal it; but this is only a deception. They may indeed stop the flowing blood, by searing the mouth of the vessels; but, by rendering the parts callous, they obstruct the cure.

In slight wounds, which do not penetrate much deeper than the skin, the best application is a bit of the common sticking-plaster. This keeps the sides of the wound together, and prevents the air from hurting it, which is all that is necessary. When a wound penetrates deep, the edges of it, if a clean incised wound, ought to be brought in contact, and retained in that position by means of slips of adhesive plaster, when, in all probability, it will become glued together by what surgeons term the adhesive inflammation. In a deep irregular wound, from blunted instruments, it is not safe to keep the lips quite close; this keeps in the matter, and is apt to make the wound fester. In this case the best way is to fill the wound with soft lint. It, however, must not be stuffed in too hard, otherwise it will do hurt. The lint may be covered with a cloth dipped in oil, or spread with the common wax-plaster or poultice; and the whole must be kept on by a proper bandage, as circumstances may point out.

The first dressing ought to continue on for at least two days; after which it may be removed, and fresh lint applied as before. If any part of the first dressing sticks so close as not to be removed with ease or safety to the patient, it may be allowed to continue, and fresh lint dipped in sweet oil laid over it. This will soften it so as to make it come off easily at next dressing. Afterwards, the wound may be dressed twice a-day in the same manner till it be quite healed. Those who are fond of salves or ointments may, after the wound is become very superficial, dress it with the yellow *basilicon*; and if fungous, or what is called *proud flesh*, should rise in the wound, it may be checked, by mixing with the

ointment a little burnt alum, or red precipitate of mercury; or it may be kept down by a compress.

When a wound is greatly inflamed, the most proper application is a poultice of bread and milk, softened with a little sweet oil or fresh butter. This must be applied instead of a plaster, and should be changed twice a-day.

If the wound be large, and there is reason to fear an inflammation, the patient should be kept on a very low diet. He must abstain from animal food, strong liquors, and every thing that is of a heating nature. If he be of a full habit, and has lost but little blood from the wound, he must be bled; and, if the symptoms be urgent, the operation may be repeated. But when the patient has been greatly weakened by loss of blood from the wound, it will be dangerous to bleed him, even though a fever should ensue. Nature should never be too far exhausted. It is always more safe to allow her to struggle with the disease in her own way, than to sink the patient's strength by excessive evacuations.

Wounded persons ought to be kept perfectly quiet and easy. Every thing that ruffles the mind, or moves the passions, as love, anger, fear, or excessive joy, are very hurtful. The body should be kept gently open, either by laxative clysters, or by a cool vegetable diet, as roasted apples, stewed prunes, boiled spinage, and the like.

BURNS.

In slight burns, which do not break the skin, it is customary to hold the part near the fire for a competent time, to rub it with salt, or to lay a compress upon it, dipped in spirits of wine or brandy. It is, however, a preferable practice to plunge immediately the burnt or scalded part into cold water, and keeping it for some time immersed. Strong brandy or alcohol is particularly praised. At first the pain is increased by this remedy, but an agreeable soothing sensation soon follows. The parts should be immersed in the spirit, and, when this cannot be done, soft old linen, soaked in the application, should be constantly kept on the part. A strong solution of alum and water is also useful. These applications are frequently made to prevent small blisters from arising, and should be continued as long as the pain remains; and in extensive burns,

creating great irritation, opium should be prescribed, as the stupor with which patients so circumstanced are attacked, receives more relief from opium than any thing else. But when the burn has penetrated so deep as to blister or break the skin, it must be dressed with some of the liniments for burns mentioned in the Appendix, or with the emollient and gently-drying ointment, commonly called *Turner's cerate*.* This may be mixed with an equal quantity of fresh olive-oil, and spread upon a soft rag, and applied to the part affected. When this ointment cannot be had, an egg may be beat up with an equal quantity of the sweetest salad-oil. This will serve very well, till a proper ointment can be prepared. When the burning is very deep, after the first two or three days, it should be dressed with equal parts of yellow *basilicon* and *Turner's cerate*, mixed together.

When the burn is violent, or has occasioned a high degree of inflammation, and there is reason to fear gangrene or mortification, the same means must be used to prevent it as are recommended in other violent inflammations. The patient, in this case, must live low, and drink freely of weak diluting liquors. He must likewise be bled and have his body kept open. But if the burnt parts should become livid or black, with other symptoms of mortification, it will be necessary to bathe them frequently with warm camphorated spirits of wine, tincture of myrrh, or other antiseptics, mixed with a decoction of the bark. In this case the bark must likewise be taken internally, and the patient's diet must be more generous, with wine, &c.

As example teaches better than precept, I shall relate the treatment of the most dreadful case of this kind that has occurred in my practice. A middle-aged man, of a good constitution, fell into a large vessel full of boiling water, and miserably scalded about one-half of his body. As his clothes were on, the burning in some parts was very deep before they could be got off. For the first two days the scalded parts had been frequently anointed with a mixture of lime-water and oil, which is a very proper application for recent burnings. On the third day when I first saw him, his fever was high, and his body costive, for which he was bled, and had an emollient clyster administered. Poultices of bread and milk, softened with fresh butter, were likewise applied to the affected parts to abate the heat and inflammation. His fever still continuing high, he was bled a second time, was kept strictly on

* See Appendix, *Turner's Cerate*.

the cooling regimen, took the saline mixture with small doses of nitre, and had an emollient clyster administered once a-day. When the inflammation began to abate, the parts were dressed with a digestive composed of brown cerate and yellow basilicon. Where any black spots appeared, they were slightly scarified, and touched with the tincture of myrrh; and to prevent their spreading, the Peruvian bark was administered. By this course, the man was so well in three weeks as to be able to attend to his business.*

Equal parts of linseed-oil and lime-water form an excellent cooling emollient application to burns produced by gunpowder. In some cases Goulard's cerate, and a weak solution of the superacetate of lead, more quickly procure ease.

For slight burns or scalds, the immediate application of clean, soft carded cotton is a good remedy; and its virtues are much increased by first soaking the cotton that lies next the skin in linseed-oil, or, if that is not at hand, in equal parts of turpentine and sweet-oil, or turpentine alone. Where none of these articles are at hand, the application of slippery-elm bark simply wet with cold water, or of scraped potato, is recommended until they can be obtained.

Sir James Earle's Plan.

This gentleman was an advocate for the use of cold water, or rather ice; and published several cases of extensive burns, in which this method was employed with the best success. The burnt parts may either be plunged in cold water, or they may be covered with linen dipped in the same, and renewed as often as it acquires warmth from the part. The application should be continued as long as the heat and pain remain, which they will often do for a great many hours.

Some caution, however, becomes necessary, in the application of cold, when the scald is of very large size, or situated upon the trunk of the body. In extensive burns, superficial as they may be, the patient is liable to be affected with cold shiverings; and these shiverings may be greatly aggravated by exposure, and by

* This practice answers very well in scalds; but in severe burns, such as are occasioned by the explosion of gunpowder, or of inflammable air in coal mines, the method recommended by Mr. Kentish, of applying to the burned part spirit of turpentine, by means of a feather, till the suppuration is fairly established, and afterwards covering the surface with pure chalk, finely powdered, is preferable practice. The patient's strength must be supported by cordial medicines, and a generous diet. In slight burns and scalds, immersing the part in iced water, or wrapping it in cloths kept constantly moist with spirit of wine or ether, which by its evaporation occasions cold, relieves pain and prevents vesication.

the application of cold. Perhaps, therefore, in these examples warm applications ought to be preferred.

The sores resulting from burns are perhaps more disposed than any other ulcer, to form large granulations, which rise considerably above the level of the surrounding skin. At this stage no poultices should be used. The sores should be dressed with Turner's cerate, or basilicon mixed with a little red precipitate, and if the part will allow of the application of a roller, the pressure will be of great service in keeping down the granulations, (commonly called proud flesh,) and rendering them more healthy.

BRUISES.

BRUISES are generally productive of worse consequences than wounds. The danger from them does not appear immediately, by which means it often happens that they are neglected. It is needless to give any definition of a disease so universally known; we shall therefore proceed to point out the method of treating it.

In slight bruises it will be sufficient to bathe the part with warm vinegar, to which a little brandy or rum may occasionally be added, and to keep cloths wet with this mixture constantly applied to it. This is more proper than rubbing it with brandy, spirits of wine, or other ardent spirits, which are commonly used in such cases.

In some parts of our country the people apply to a recent bruise a cataplasm of fresh cow-dung. I have often seen this cataplasm applied to violent contusions, occasioned by blows, falls, bruises, and such like, and never knew it fail to have a good effect.

When a bruise is very violent, the patient ought immediately to be bled, and put upon a proper regimen; a sufficient number of leeches ought likewise to be applied to the part. His food should be light and cool, and his drink weak, and of an opening nature; as whey sweetened with honey, decoctions of tamarinds, barley, cream-tartar-whey, and the like. The bruised part must be bathed with vinegar and water, as directed above; and a poultice made by boiling crumb of bread, elder-flowers, and camomile-flowers, in equal quantities of vinegar and water, applied to it. This poultice is peculiarly proper when a wound is joined to the bruise. It may be renewed two or three times a-day.

As the structure of the vessels is totally destroyed by a violent bruise, there often ensues a great loss of substance, which produces an ulcerous sore very difficult to cure. If the bone be affected, the sore will not heal before an exfoliation takes place; that is, before the diseased part of the bone separates, and comes out through the wound. This is often a very slow operation, and may even require several years to be completed. Hence it happens, that these sores are frequently mistaken for the king's evil, and treated as such, though in fact they proceed solely from the injury which the solid parts received from the blow.

Patients in this situation are pestered with different advices. Every one who sees them proposes a new remedy, till the sore is so much irritated with various and opposite applications, that it is often at length rendered absolutely incurable. The best method of managing such sores is, to take care that the patient's constitution does not suffer by confinement or improper medicine, and to apply nothing to them besides simple ointment spread upon soft lint, over which a poultice of bread and milk, with boiled camomile flowers, or the like, may be put, to nourish the part, and keep it soft and warm. Nature, thus assisted, will generally in time operate a cure, by throwing off the diseased parts of the bone, after which the sore soon heals.

ULCERS.

ULCERS are divided into local or constitutional; it is only, however, within certain limits that this distinction is well founded; for an ulcer which is at first completely local, may in time affect the system so as to become constitutional; and ulcers which derive their origin from some general affection of the system, may remain after the removal of the constitutional disorder, by which they were originally produced.

Ulcers may be the consequence of wounds, bruises, or imposthumes improperly treated; they may likewise proceed from an ill state of the humors, or what may be called a bad habit of body.

In the latter case they ought not to be hastily dried up, otherwise it may prove fatal to the patient. Ulcers happen most commonly in the decline of life; and persons who neglect exercise, and live grossly, are most liable to them. They might often be pre-

vented by retrenching some part of the solid food, or by opening artificial drains, as issues, or setons.

An ulcer may be distinguished from a wound by its discharging a thin watery humor, which is often so acrid as to inflame and corrode the skin; by the hardness and perpendicular situation of its sides or edges; by the time of its duration, &c.

It requires considerable skill to be able to judge whether or not an ulcer ought to be dried up. In general, all ulcers which proceed from a bad habit of body, should be suffered to continue open, at least till the constitution has been so far changed by proper regimen, or the use of medicine, that they seem disposed to heal of their own accord. Ulcers which are the effect of malignant fevers, or other acute diseases, may generally be healed with safety after the health has been restored for some time. The cure ought not, however, to be attempted too soon, nor at any time without the use of purging medicines and a proper regimen. When wounds or bruises have, by wrong treatment, degenerated into ulcers, if the constitution be good, they may generally be used with safety. When ulcers either accompany chronic diseases, or come in their stead, they must be cautiously healed. If an ulcer conduces to the patient's health, from whatever cause it proceeds, it ought not to be healed; but if, on the contrary, it wastes the strength, and consumes the patient by a slow fever, it should be healed as soon as possible.

We would earnestly recommend a strict attention to these particulars to all who have the misfortune to labor under this disorder, particularly persons in the decline of life; as we have frequently known people throw away their lives by the want of it, while they were extolling and generously rewarding those whom they ought to have looked upon as their executioners.

Cure of Ulcers by a Roller and Compresses, on Mr. Whately's Plan.

Bandages are of the most essential service in healing many kinds of ulcers; but their efficacy is so great in curing numerous indolent sores, that they are sometimes considered the principal means of cure. Mr. Whately, who is one of the most zealous modern advocates for this mode of treating ulcers, offers the following remarks for the application of the roller and compresses.

"The best width for a flannel roller, designed for those who have slender legs, is three inches; but for those whose legs are of a larger size, they should always be three inches and a half in

width. They must therefore, at first, be torn a little wider, that they may be of their proper width when repeatedly washed. It will likewise be found, that rollers made of fine, soft, and open flannel will answer much better than those made of coarse or hard flannel. The rollers should be often washed, as they become much softer, and of course sit easier when quite clean than when soiled.

“In applying a roller (says this gentleman) the first circle should be made *round* the *lowest* part of the ankle, as near as possible to the heel; the second should be formed from thence round the foot; the third, to be passed again round the foot quite to the toes. The roller should then be passed from the foot round the ankle and instep a second time, to make the fourth circle. In doing this it should be brought nearer (but not over) the point of the heel than it was at the *first time* of going round the part. The fifth circle should pass over the ankle again, and not more than half an inch higher up the leg than the fourth circle. The sixth, seventh, eighth, and ninth circles should ascend spirally along the small of the leg, at the *exact distance* of three-fourths of an inch from each other. Having proceeded thus far up the leg, we may begin to increase the distance of the circles from each other, which may now succeed each other upward to the knee, at the distance of from one to two inches, according to the size and shape of the leg. At that part where the calf of the leg commences it is generally necessary to let the upper edge of the roller be once, twice, or thrice turned downwards, for about half the circumference of the leg, in order to make the roller lay smooth between the middle of the calf and the small of the leg. When the roller has been thus applied as far as the knee there will be a portion of it to spare, of perhaps a yard in length; this remainder should be brought down by spiral windings, at greater distances from each other than those which were made in the ascent of the roller. The windings should in general be completed in the small of the leg, where the roller should be pinned.

“In applying the compresses, it is necessary in every instance, to put them on one by one, and not all in a mass, though they be of a proper size and number. They should be crossed in different directions; the largest of them should in no case be longer than just to meet on the opposite side of the leg to which they are applied. If the same compresses in any cases be applied two days together, they should always be turned on the contrary side at each re-application, in order to prevent wrinkles on the skin.”

As Mr. Whately objects to pressure being made with adhesive plaster, the following is the calamine cerate he has usually employed.

Take Prepared Hog's Lard, three pounds.
 Lead Plaster, one and a half pounds.
 Prepared Calamine, one pound.

To this formula Mr. Whately adds another for making a cerate, which nearly resembles the unguentum tripharmicum of the old dispensatory; but being less oily, it makes a much more adhesive plaster. It should be spread on rag or silk, as an external covering to the dressing on lint, where a tow-plaster cannot be conveniently used; as in wounds of the face or hands, a bubo, or any other sore, where an external plaster cannot readily be retained in its situation by a bandage. This plaster is likewise so mild that it never irritates the skin. It has also been found very useful in fractures. The following is the formula:—

Take Lead Plaster, one pound.
 Hog's Lard, prepared, six ounces.
 Vinegar, four ounces.
 Mix.

Mr. Baynton's Plan of curing old Ulcers of the Leg by Means of Adhesive Plaster, without Rest.

Mr. Baynton says that the means proposed by him will be found, in most instances, sufficient to accomplish cures in the worst cases, without pain or confinement. After having been repeatedly disappointed in the cure of old ulcers, Mr. Baynton determined on *bringing their edges nearer together by means of slips of adhesive plaster*. To this he was chiefly led, from having frequently observed, that the probability of an ulcer continuing sound depended much on the size of the cicatrix which remained after the cure appeared to be accomplished; and from knowing well that the true skin was a much more substantial support and defence, as well as a better covering, than the frail one, which is obtained by the assistance of art. But, when he had recourse to the adhesive plaster with a view to lessen the probability of those ulcers breaking out again, he little expected, that an application so simple would prove the easiest, most efficacious, and most agreeable means of treating ulcers. His method is as follows:

“The parts should be first cleared of the hair, sometimes found in considerable quantities on the legs, by means of a razor, that none of the discharges, by being retained, may become acrid and inflame the skin, and that the dressings may be removed with ease at each time of their renewal, which, in some cases, where the discharges are profuse, and the ulcers very irritable, may, perhaps, be necessary twice in the twenty-four hours, but which I have in

every instance been only under the necessity of performing once in that space of time.

“The plaster should be prepared by slowly melting, in an iron ladle, a sufficient quantity of litharge plaster, or diacylon, which, if too brittle when cold to adhere, may be rendered adhesive by melting half a drachm of resin with every ounce of the plaster; when melted it should be stirred till it begins to cool, and then spread thinly upon slips of smooth porous calico, of a convenient length and breadth, by sweeping it quickly from the end held by the left hand of the person who spreads it, to the other, held firmly by another person, with the common elastic spatula used by apothecaries: the uneven edges must be taken off, the pieces cut into slips about two inches in breadth, and of a length that will, after being passed round the limb, leave an end of about four or five inches. The middle of the piece so prepared is to be applied to the sound part of the limb, opposite to the inferior part of the ulcer, so that the lower edge of the plaster may be placed about an inch below the lower edge of the sore, and the ends drawn over the ulcer with as much gradual extension as the patient can well bear; other slips are to be secured in the same way, each above and in contact with the other, until the whole surface of the sore and the limb are completely covered, at least one inch below, and two or three above the diseased part. The whole of the leg should then be equally defended with soft pieces of calico, three or four times doubled, and a bandage of the same, about three inches in breadth, and four or five yards in length, or rather as much as will be sufficient to support the limb from the toe to the knee, should be applied as smoothly as can possibly be performed, and with as much firmness as can be borne by the patient, being first passed round the leg at the ankle-joint, then as many times round the foot as will cover and support every part of it, except the toes, and afterwards up the limb till it reaches the knee, observing that each turn of the bandage should have its lower edge so placed as to be about an inch above the lower edge of the fold next below. If the parts be much inflamed, or the discharge very profuse, they should be well moistened, and kept cool with cold spring water, poured upon them as often as the heat may indicate to be necessary, or, perhaps, at least, every hour. The patient may take what exercise he pleases, and it will always be found, that an alleviation of his pain and the promotion of his cure will follow as its consequence, though, under other modes of treating the disease, it aggravates the pain, and prevents the cure.

“These means, when circumstances render it convenient, should be applied soon after rising in the morning, as the legs of persons affected with this disease are then found most free from tumefaction, and the advantages will be greater than when they are applied to limbs in a swollen state. The first applications will sometimes occasion pain, which, however, subsides in a short time, and is less sensibly felt at each succeeding dressing. The force with which the ends are drawn over the limb must then be gradually increased, and when the parts are restored to their natural state of ease and sensibility, which will soon happen, as much may be applied as the calico will bear, or the surgeon can exert; especially if the limb be in that enlarged and compressible state, which has been denominated the scorbutic, or if the edges of the wound be widely separated from each other.”

“Cures,” adds Mr. B., “will be generally obtained without difficulty by the mere application of the slips and bandage, but, when the parts are much inflamed, and the secretions great, or the season hot, the frequent application of cold water will be found a valuable auxiliary, and may be always safely had recourse to, where the heat of the part is greater than is natural, and the body free from perspiration.”

The most proper regimen for promoting the cure of ulcers is to avoid all spices, salted and high-seasoned food, all strong liquors, and to lessen the usual quantity of flesh meat. The body ought to be kept gently open by a diet consisting chiefly of cooling laxative vegetables, and by drinking butter-milk, whey sweetened with honey, or the like. The patient ought to be kept cheerful, and should take as much exercise as he can easily bear.

Limewater has frequently been known to have very happy effects in the cure of obstinate ulcers. It may be used in the same manner as directed for the stone and gravel. For indolent ulcers, Sir Everard Home recommends the application of diluted nitrous acid, in the proportion of a scruple to eight ounces of water. It promotes, in an uncommon manner, the progress of the cure; and, although painful at first, this sensation soon ceases, and produces the best effects.

My late learned and ingenious friend Dr. White strongly recommends the use of the solution of corrosive sublimate of mercury in brandy, for the cure of obstinate ill-conditioned ulcers. I have frequently found this medicine, when given according to the Doctor's directions, prove very successful. The dose is a table-spoonful night and morning; at the same time washing the sore twice

or thrice a-day with it. In a letter which I had from him a little before his death, he informed me, "that he observed washing the sore thrice a-day with the solution of a triple strength was very beneficial."*

The carrot poultice is found to agree with a great many irritable sores; and the decoction of poppy-heads is also found to be a good liquor for making poultices. The great objection to poultices in these cases being their weight, the limb should always, if possible, rest upon the poultice, and not the poultice upon the limb. When the weight cannot be avoided and is hurtful, a lighter application should be chosen. When poultices are employed, their use should be continued as long as the granulations are small, and the ulcer rapidly diminishing in size; and this, even until the cicatrization be complete. When the granulations become large and loose in their texture, poultices should be left off, when a slight or necessary degree of pressure may be adopted.

FISTULA IN ANO.

ULCERS in the neighborhood of the anus are peculiarly liable to become fistulous, and when in that state are very difficult to cure. A fistula, is frequently the consequence of neglected or ill-treated piles. The presence of this complaint is discovered by the sensation of a pricking pain on going to stool, which is also perceived during the exertion of coughing or sneezing. On examination, a stain of a pale color, occasionally accompanied with a little blood, will be found upon the linen; the fæces are also slightly streaked with matter. This matter issues from a small ulcer with one or more orifices, in the neighborhood of the anus, the other extremity of which generally communicates with the internal cavity of the rectum.

Various ointments and washes have been recommended for the cure of this disease, but without success. It cannot be cured except by a surgical operation, which it would be useless to describe in a work of this kind, as every surgeon competent to the performance of the operation is well versed in every thing appertaining to it.

* In ulcers of the lower limbs great benefit is often received from wearing a laced stocking, as this prevents the flux of humors to the sores, and disposes them to heal.

Ulcerations about the rectum are frequently symptomatic of affections of the liver. When that is known to be the case, or when they occur about the decline of life, or in persons who have resided long in warm climates, we should not be too busy with our efforts to heal them up. In such persons they seem frequently to operate as salutary drains to the constitution, and to prevent the access of other diseases. Many examples have occurred of persons somewhat advanced in life, being attacked by asthma, spitting of blood, paralysis, and even insanity, within a short period of time after undergoing the operation for the radical cure of a fistula; while others, of apparently similar constitutions, who have submitted to the inconveniency of a discharge, and been attentive to keep the parts clean and warm, have lived to an advanced period of life. Individuals past the meridian of life, who determine to undergo the operation for fistula, should never omit to have an issue opened in some other part of the body, which may serve as a succedaneum for the natural drain they are about to obliterate.

DISLOCATIONS.

WHEN a bone is moved out of its place or articulation, so as to impede its proper functions, it is said to be *luxated* or *dislocated*. As this often happens to persons in situations where no medical assistance can be obtained, by which means limbs, and even lives are frequently lost, we shall endeavor to point out the method of reducing the most common luxations, and those which require immediate assistance. Any person of common sense and resolution, who is present when a dislocation happens, may often be of more service to the patient than the most expert surgeon can after swelling and inflammation have come on. When these are present, it is difficult to know the state of the joint, and dangerous to attempt a reduction; and by waiting till they are gone off, the muscles become so relaxed, and the cavity filled up, that the bone can never afterwards be retained in its place.

A recent dislocation may generally be reduced by extension alone, which must always be greater or less according to the strength of the muscles which move the joint, the age, robustness, and other circumstances of the patient. When the bone has been out of its place for any considerable time, and swelling or inflam-

mation has come on, it will be necessary to bleed the patient, and, after fomenting the part, to apply soft poultices with vinegar to it for some time before the reduction is attempted.

["Constitutional, as well as mechanical means, are often necessary to assist in the reduction of dislocation; and in many cases, the employment of force only, is very improper; as unassisted by constitutional means, much greater violence must be exercised, and consequently the immediate suffering, and subsequent inflammation, will be proportioned to this violence.

Bleeding, the warm bath, and such medicines as create nausea, are the best means of assisting constitutionally in the reduction of dislocation, as they most readily produce a state of faintness, during which the muscular power is greatly diminished. Bleeding is the most powerful, and at the same time the most speedy method of the three, if the blood be drawn from a large orifice, and the patient be kept in the erect position; it cannot, however, be resorted to in all cases, and might be highly injurious in very old or debilitated persons; but in the young and robust it may be employed with safety and advantage in the mode I have proposed.

In using the warm bath, the temperature should be from 100° to 110°; and the heat should be kept up until the patient feels faint, when he should be taken out, and the mechanical means should be immediately resorted to. The desired effect is much sooner produced by abstraction of blood, during the time that the patient is in the bath, than by bleeding, or the bath singly.

The third mode, viz., that of exciting nausea by the exhibition of emetic tartar in small doses, is not so certain as the former modes, but it is exceedingly useful in keeping up the state of faintness produced by bleeding or the warm bath, when the dislocation has been of long standing and likely to require a continued application of mechanical means for its reduction."

"When the power of the muscles has been lessened, the reduction of the dislocation should be attempted, by fixing one bone, whilst the extremity of the other is drawn towards the socket by extending the limb. Inattention to this point is one of the great causes of failure in attempting to reduce dislocations. The extension should be carefully and gradually made, and continued rather to fatigue than extend the muscles by violence. Violence is as likely to lacerate sound parts as to reduce the dislocation, and this I have known to occur."*]

* Sir Astley Cooper.

All that is necessary after the reduction, is to apply cloths dipt in vinegar or camphorated spirits of wine to the part, and to keep it perfectly easy. Many bad consequences proceed from the neglect of this rule. A dislocation seldom happens without the tendons and ligaments of the joint being stretched, and sometimes torn. When these are kept easy till they recover their strength and tone, all goes on very well; but if the injury be increased by too frequent an exertion of the parts, no wonder if they be found weak and diseased ever after.

DISLOCATION OF THE JAW.

THE lower jaw may be luxated by yawning, blows, falls, chewing hard substances, or the like. It is easily known, from the patient's being unable to shut his mouth or to eat any thing, as the teeth of the under jaw do not correspond with those of the upper; besides, the chin either hangs down or is thrown towards one side, and the patient is neither able to speak distinctly, nor to swallow without considerable difficulty.

The usual method of reducing a dislocated jaw, is to set the patient upon a low stool, so as an assistant may hold the head firm by pressing it against his breast. The operator is then to thrust his two thumbs, being first wrapt up with linen cloths that they may not slip, as far back into the patient's mouth as he can, while his fingers are applied to the jaw externally. After he has got firm hold of the jaw, he is to press it strongly downwards and backwards, by which means the elapsd heads of the jaw may be easily pushed into their former cavities.

DISLOCATION OF THE NECK.

THE neck may be dislocated by falls, violent blows, or the like.* In this case, if the patient receives no assistance, he soon dies,

* The os occipitis, and first cervical vertebra, are so firmly connected by ligaments, that there is no instance of their being luxated from an external cause, and were the accident to happen, it would immediately prove fatal by the unavoidable compression and injury of the spinal marrow; and in dislocations of the first cervical vertebra from the second, patients can hardly be expected to survive a mischief of this kind in so high a situation; when the transverse ligament is broken, and the *dentated process* is thrown directly backward against the medulla oblongata, the effect must be instant death, as happened in a case lately related by Mr. C. Bell. All dislocations of the neck in which the *processus dentatus* is displaced are immediately fatal, although luxations of the oblique cervical processes lower down may be reduced. Ed.

which makes people imagine the neck was broken; it is, however, for the most part, only partially dislocated, and may be reduced by almost any person who has resolution enough to attempt it. A complete dislocation of the neck is instantaneous death.

When the neck is dislocated, the patient is immediately deprived of all sense and motion; his neck swells, his countenance appears bloated, his chin lies upon his breast, and his face is generally turned towards one side.

To reduce this dislocation, the unhappy person should immediately be laid upon his back on the ground, and the operator must place himself behind him, so as to be able to lay hold of his head with both hands, while he makes a resistance by placing his knees against the patient's shoulders. In this posture he must pull the head with considerable force, gently twisting it at the same time, if the face be turned to one side, till he perceives that the joint is replaced, which may be known from the noise which the bones generally make when going in, the patient's beginning to breathe, and the head continuing in its natural posture.

This is one of those operations which it is more easy to perform than describe. I have known instances of its being happily performed even by women, and often by men of no medical education. After the neck is reduced, the patient ought to be bled, and should be suffered to rest for some days, till the parts recover their proper tone.

DISLOCATION OF THE RIBS.

As the articulation of the ribs with the back-bone is very strong, they are not often dislocated. It does, however, sometimes happen, which is a sufficient reason for our taking notice of it. When a rib is dislocated, either upwards or downwards, in order to replace it, the patient should be laid upon his belly on a table, and the operator must endeavor to push the head of the bone into its proper place. Should this method not succeed, the arm of the disordered side may be suspended over a gate or ladder, and while the ribs are thus stretched asunder, the heads of such as are out of place may be thrust into their former situation.

Those dislocations wherein the heads of the ribs are forced inwards, are both more dangerous and the most difficult to reduce, as neither the hand nor any instrument can be applied internally to direct the luxated heads of the ribs. Almost the only thing that can be done is, to lay the patient upon his belly over a cask, and

to move the fore-part of the rib inward towards the back, sometimes shaking it; by this means the heads of the luxated ribs may slip into their former place.

In a modern work* may be read the particulars of a case, where all the ribs are said to have been dislocated from the cartilages. The accident arose from the chest being violently compressed between the beam of a mill and the wall. In such a case, there is no means of reduction, except the effect produced by forcible inspiration; nor are there any modes of relief but bleeding, and the application of a roller round the chest.

DISLOCATION OF THE SHOULDER.

THE humerus or upper-bone of the arm may be dislocated in various directions: it happens, however, most frequently downwards. From the nature of its articulation, as well as from its exposure to external injuries, this bone is the most subject to dislocation of any in the body. A dislocation of the humerus may be known by a depression or cavity on the top of the shoulder, and an inability to move the arm. When the dislocation is downward or forward, the arm is elongated, and a ball or lump is perceived under the arm-pit; but when it is backward, there appears a protuberance behind the shoulder, and the arm is thrown forwards towards the breast.

The usual method of reducing dislocations of the shoulder is to seat the patient upon a low stool, and to cause an assistant to hold his body so that it may not give way to the extension, while another lays hold of the arm a little above the elbow, and gradually extends it. The operator then puts a napkin under the patient's arm, and causes it to be tied behind his own neck; by this, while a sufficient extension is made, he lifts up the head of the bone, and with his hands directs it into its proper place. There are various machines invented for facilitating this operation, but the hand of an expert surgeon is always more safe. In young and delicate patients, I have generally found it a very easy matter to reduce the shoulder, by extending the arm with one hand, and thrusting in the head of the bone with the other. In making the extension, the arm ought always to be a little bent.

[Another very effectual mode, is to place the patient on a sofa, or a table, near the edge, in a recumbent posture. A wetted roller of linen or cotton should be bound round the arm just above the

* C. Bell's Surg. Observations, p. 171

elbow, over which a handkerchief or towel should be fastened; the elbow being then separated from the side, the operator places the heel of one foot in the arm-pit, and rests the other upon the ground, as he sits by the patient's side. The heel should be placed far enough back to receive the lower edge of the shoulder blade, and prevent its descent at the time that the arm is extended. The extension is to be made from the handkerchief or towel, and continued steadily for four or five minutes, in which time usually the head of the bone slips into its proper cavity. The force of two or more persons may be employed in extending, by means of the towel, if required. (Cooper.) In persons of great muscular power, it sometimes happens that the violence of the pain causes them to frustrate the operation, by struggling and withdrawing the arm from the assistants before the muscles are sufficiently relaxed to allow the head of the bone to return to its place. In such cases, the best plan is to lay the arm over a pole, raised to the height of the shoulder of the patient when standing. Then let the operator lay hold of the wrist and elbow, and press very slowly and gradually, but firmly downwards. A gate, or fence, will answer, where it is not convenient to erect a pole. By this method, the struggles of the patient only serve to facilitate the operation.]

DISLOCATION OF THE ELBOW.

THE bones of the fore-arm may be dislocated in any direction. When this is the case, a protuberance may be observed on that side of the arm towards which the bone is pushed, from which, and the patient's inability to bend his arm, a dislocation of this joint may easily be known.

Two assistants are generally necessary for reducing a dislocation of the elbow; one of them must lay hold of the arm above, and the other below the joint, and make a pretty strong extension, while the operator returns the bones into their proper place. Afterwards the arm must be bent, and suspended for some time with a sling about the neck.

Luxations of the wrist and fingers are to be reduced in the same manner as those of the elbow, viz. by making an extension in different directions, and thrusting the head of the bone into its place.

DISLOCATION OF THE CLAVICLE OR COLLAR-BONE.

THE clavicle may be luxated at its sternal extremity,* forwards, backwards, and upwards, but never downwards, on account of the situation of the cartilage of the first rib. The luxation forwards is most frequent, and almost the only one ever met with.

In reducing these dislocations of the sternal end of the clavicle, a lever is to be made of the arm, by means of which the shoulder is to be brought outwards; and when thus brought outwards, it is to be pushed forwards, if the dislocation be in that direction; backward, if the dislocation be behind; and upwards, if it be above. It is as difficult to keep the bone reduced, as it is easy to reduce it. so smooth and oblique are the articular surfaces. Dislocations of the capsular end of the clavicle, or that nearest the shoulder-joint, are much less common. The luxation upwards is the only one that ever occurs; and this is reduced by carrying the shoulder outwards, putting a cushion in the axilla, and applying a proper bandage, as in fractures of this bone, making the turns ascend from the elbow to the shoulder, so as to press the luxated end of the bone downward, and keep it in its due situation, at the same time that the elbow is confined close to the side, and supported in a sling, by which means the shoulder will be kept raised and inclined outwards.

DISLOCATION OF THE PATELLA OR KNEE-PAN.

THIS bone may be luxated outwards, or even inwards, when violently pushed in this direction. The dislocation outwards is the most frequent.

The generality of cases of this description are easily reduced by pressure, when the extensor muscles of the leg have been completely relaxed; but owing to a lax state of the ligament of the patella, or other predisposing causes, the bone is sometimes with difficulty retained in its proper position, unless a roller be applied.

The inflammatory affection of the joint is to be opposed by topical bleeding, purging, and the use of evaporating lotions. The joint must be kept quiet a few days, and then gently moved, to prevent stiffness.

* The end nearest the breast-bone.

DISLOCATION OF THE THIGH.

[THERE are four dislocations of the hip-joint—viz. 1. Upwards, on the dorsum of the ilium—2. Downwards, or into the foramen ovale—3. Backwards, or into the ischiatic notch—4. Forwards and upwards, or upon the body of the pubes.

1. *Dislocation upwards on the body of the hip-bone.*—This is the most frequent of the displacements of the thigh. It may be distinguished from the other forms of dislocation, by the limb being from one to two inches shorter than the other. The toe rests upon the instep of the other foot; and the knee and foot of the dislocated limb are turned inwards. The injured leg cannot be separated from the other, and the natural roundness of the hip will have disappeared.

To reduce it, after bleeding, the use of the warm bath, and nauseating doses of tartar emetic, as far as may be necessary, lay the patient on his back, and apply a bandage of sufficient length around the upper part of the pelvis (or hips) to reach to posts about ten feet apart, and then fasten the ends to the posts, so as to maintain the position of the body firm. Then pass a girth between the testicle and thigh of the affected side, in the direction of the body, and fasten it to another post. Then apply a wet bandage of strong materials around the thigh, a short distance above the knee, and passing a second girth through this bandage, attach it to a pulley, or give it into the hands of a sufficient number of assistants; after which, turn the dislocated limb across the other, about two thirds of the way down, and make gentle but constant extension, by means of the pulley or assistants. When the head of the bone has arrived at the margin of the cavity which is to receive it, lift it over it, either by means of the hands clasped under the thigh, or a towel passed under it, tied, and hung over the neck of the operator.

2. *Dislocation downwards, into the foramen ovale.*—This accident happens when a person falls on the feet or knees when they are widely separated from each other. The limb is generally about two inches longer than the other, and the head of the bone can be felt by pressing on the inner and upper part of the thigh in thin persons. When the foot of the dislocated limb is on the ground, the body is bent forward; or, if the body be erect, the knee is advanced. The foot is generally neither turned outwards nor inwards. A slight hollow may be perceived in the groin; the knee

is widely separated from the other, and cannot be brought to it without great pain.

To reduce it, place the patient on his back—pass a girth, or a folded sheet, between the testicle and the upper part of the dislocated thigh, and fix it to a post or a staple in the wall. Put your hand on the ankle of the affected limb, and draw it gradually and firmly over the sound leg—or, if the thigh be very large, behind the sound limb,—and the head of the bone will slip into its socket. It is generally necessary to fix the hips firmly, or the full advantage of the lever power will not be gained, on account of the pelvis moving in the same direction with the head of the bone. Placing the patient upon a bed, so that one of the bed-posts is received between the upper part of the thighs, and then forcing the injured limb across the sound one, will also effect the same purpose.

3. *Dislocation backwards, into the ischiatic notch.*—This dislocation is the most difficult both to detect and to reduce. The injured limb is from a half to one inch shorter than the other; the knee and foot are turned inwards, but not so much so as in the “first dislocation;” the toe rests against the ball of the toe of the other foot; in a standing position, the toe reaches the ground, but the heel does not; the knee is bent, and is brought a little forwards, but not so much so as in the dislocation upwards.

To reduce it (which is a very difficult matter), lay the patient upon his sound side, and apply the girths and bandages, and pulleys, precisely as directed in the “first dislocation.” The dislocated thigh is then to be brought across the middle of the other thigh, and extension is to be made by the pulley or by assistants, at an angle of forty-five degrees with the body. At the time extension is being made, an assistant, with a towel passed under the thigh and over his neck, and his hands pressing on the hips, must lift the head of the bone as it is drawn towards the socket, and over its lip.

4. *Dislocation forwards and upwards, upon the body of the pubes.*—This is very easily detected. The limb is an inch shorter than the other; the knee and foot are turned outwards, and cannot be rotated inwards, but admit of slight motion forwards and outwards. The head of the bone may be distinctly felt on the pubes, in the groin, and may be seen to move by moving the thigh.

To reduce it, place the patient on his side. A girth is to be carried between the testicle and inner part of the dislocated thigh, and fixed to a post or staple, a little past the line of the body forwards. Attach the roller, band, &c. as in the first dislocation, and

make extension in a line behind the axis of the body. After this extension has been continued for some time, an assistant, with a towel placed under the upper part of the thigh and over his neck, and pressing with his hands on the pelvis, must lift the head of the bone over the pubis and edge of its socket.]

Dislocations of the *knees*, *ankles*, and *toes*, are reduced much in the same manner as those of the upper extremities, viz. by making an extension in opposite directions, while the operator replaces the bones. In many cases, however, the extension alone is sufficient, and the bone will slip into its place merely by pulling the limb with sufficient force. It is not hereby meant, that force alone is sufficient for the reduction of dislocation. Skill and address will often succeed better than force. I have known a dislocation of the thigh reduced by one man, after all the force that had been used by six had proved ineffectual.

When the force of the muscles in very robust persons resists every effort to reduce a dislocated limb, a grain or two of emetic tartar dissolved in water may be administered, and taking advantage of the general languor and debility that precedes the act of vomiting, the limb may be reduced with facility. I have known this plan successfully practised; to which may be added bleeding and the warm bath.

FRACTURES, OR BROKEN BONES.

THERE is, in most country-villages, some person who pretends to the art of reducing fractures. We would, however, advise people never to employ such operators, when an expert and skilful surgeon can be had; but when that is impracticable, they must be employed: we shall therefore recommend the following hints to their consideration:—

When a large bone is broken, the patient's diet ought in all respects to be the same as in an inflammatory fever. He should likewise be kept quiet and cool, and his body open. It ought, however, to be here remarked, that persons who have been accustomed to live high are not all of a sudden to be reduced to a very low diet. This might have fatal effects. There is often a necessity for indulging even bad habits in some measure, where the nature of the disease might require a different treatment.

It will generally be necessary to bleed the patient immediately after a fracture, especially if he be young, of a full habit, or has at the same time received any bruise or contusion. This operation should not *only* be performed soon after the accident happens, but, if the patient be very feverish, it may be repeated next day. When several of the ribs are broken, bleeding is peculiarly necessary.

“The most unequivocal symptoms of fractures, are the *crepitus* or grating noise distinguished on moving the limb, occasioned by the fractured ends; the separation and inequalities of the ends of the fracture, when the bone is superficial; the change in the form of the limb, and the shortening of it.

“The treatment of fractures in general embraces three principal indications. 1. To reduce the pieces of the bones into their natural situation. 2. To secure and keep them in their place by proper bandages and splints. 3. To prevent unpleasant symptoms, and to relieve them, when, in spite of every effort to the contrary, they do arise.”

If any of the large bones which support the body are broken, the patient must keep his bed for several weeks. It is by no means necessary, however, that he should lie all that time, as is customary upon his back. This situation sinks the spirits, galls and frets the patient's skin, and renders him very uneasy. After the second week, he may be gently raised up, and may sit several hours, supported by a bed-chair, or the like, which will greatly relieve him. Great care, however, must be taken in raising him up and laying him down, that he make no exertions himself, otherwise the action of the muscles may pull the bone out of its place.

It is of great importance to keep the patient dry and clean while in this situation. By neglecting this, he is often so galled and excoriated, that he is forced to keep shifting places for ease. I have known a fractured thigh-bone, after it had been kept straight for above a fortnight, displaced by this means, and continue bent for life, in spite of all that could be done.

It has been customary when a bone was broken, to keep the limb for five or six weeks continually upon the stretch. But this is a bad posture. It is both uneasy to the patient and unfavorable to the cure. The best situation is to keep the joint a little bent. This is the posture into which every animal puts its limbs when it goes to rest, and in which fewest muscles are upon the stretch. It is easily effected, by either laying the patient upon his side, or making the bed so as to favor this position of the limb.

Bone-setters ought carefully to examine whether the bone be

not shattered or broken into several pieces. In this case it will sometimes be necessary to have the limb immediately taken off, otherwise gangrene or mortification may ensue. The horror which attends the very idea of an amputation often occasions its being delayed in such cases till too late. I have known this principle operate so strongly, that a limb, where the bones were shattered into more than twenty pieces, was not amputated before the third day after the accident, when the gangrene had proceeded so far as to render the operation useless.

When a fracture is accompanied with a wound, it must be dressed in all respects as a wound.

All that art can do towards the cure of a broken bone is to lay it perfectly straight, and to keep it quite easy.

The best method of retention is by two or more splints made of leather or pasteboard. These, if moistened before they are applied, soon assume the shape of the included member, and are sufficient, by the assistance of a very slight bandage, for all the purposes of retention. The bandage which we would recommend is that made with twelve or eighteen tails. It is much easier applied and taken off than rollers, and answers all the purposes of retention equally well. The splints should always be as long as the limb, with holes cut for the ancles when the fracture is in the leg.

In fractures of the ribs, where a bandage cannot be properly used, an adhesive plaster may be applied over the part. The patient in this case ought to be bled, to keep himself quite easy, and avoid every thing that may occasion sneezing, laughing, coughing, or the like. He ought to keep his body in a straight posture, and should take care that his stomach be constantly distended, by taking frequently some light food, and drinking freely of weak watery liquors.

When the ribs are fractured on both sides bandages are not admissible, as the patient would be in extreme danger of being suffocated, from impeded action of the chest.

The most proper external application for a fracture is *oxycrate*, or a mixture of vinegar and water, to which some spirits of wine may be added. The bandages should be wet with this at every dressing, if the inflammation runs high.

STRAINS.

STRAINS are often attended with worse consequences than broken bones. The reason is obvious: they are generally neglected. When a bone is broken, the patient is obliged to keep the member easy, because he cannot make use of it; but when a joint is only strained, the person finding he can still make a shift to move it, is sorry to lose his time for so trifling an ailment. In this way, he deceives himself, and converts into an incurable malady what might have been removed by only keeping the part easy for a few days.

Country-people generally immerse a strained limb in cold water. This is very proper, provided it be done immediately, and not kept in too long. But the custom of keeping the part immersed in cold water for a long time is certainly dangerous. It relaxes instead of bracing the part, and is more likely to produce a disease than remove one.

Wrapping a garter, or some other bandage, pretty tight about the strained part, is likewise of use. It helps to restore the proper tone of the vessels, and prevents the action of the parts from increasing the disease. It should not, however, be applied too tight. I have frequently known bleeding near the affected part have a very good effect; but what we would recommend above all, is *ease*. It is more to be depended on than any medicine, and seldom fails to remove the complaint.

A great many external applications are recommended for strains, some of which do good, and others hurt. The following are such as may be used with the greatest safety, viz. poultices made of stale beer or vinegar and oatmeal, camphorated spirits of wine, Mindererus's spirit, volatile liniment, volatile aromatic spirit diluted with a double quantity of water, and the common fomentation, with the addition of brandy or spirit of wine.

RUPTURES.

CHILDREN and old people are most liable to this disease. In the former it is generally occasioned by excessive crying, coughing, or vomiting. In the latter, it is commonly the effect of blows or violent exertions of the strength, as leaping, carrying great weights,

&c. In both, a relaxed habit, indolence, and an oily or very moist diet, dispose the body to this disease.

A rupture sometimes proves fatal before it is discovered. Whenever sickness, vomiting, and obstinate costiveness give reason to suspect an obstruction of the bowels, all those places where ruptures usually happen ought carefully to be examined. The protrusion of a very small part of the bowel will occasion all these symptoms; and, if not returned in due time, will prove fatal. On the first appearance of a rupture in an infant, it ought to be laid upon its back with its head very low. While in this posture, if the bowel does not return of itself it may easily be put up by gentle pressure. After it is returned, a piece of sticking-plaster may be applied over the part, and a proper truss or bandage must be constantly worn for a considerable time. The method of making and applying rupture-bandages for children is pretty well known. The child must, as far as possible, be kept from crying, and from all violent exertions, till the rupture is quite cured.

In adults, when the bowel has been forced down with great violence, or happens from any cause to be inflamed, there is often great difficulty in returning it, and sometimes the thing is quite impracticable without an operation; a description of which is foreign to our purpose. As I have been fortunate enough, however, always to succeed in my attempts to return the bowel, without having recourse to any other means than what are in the power of every man, I shall briefly mention the method which I generally pursue.

After the patient has been bled, he must be laid upon his back, with his head very low, and his breech raised high with pillows. In this situation flannel-cloths wrung out of a decoction of camomile-flowers, or, if these are not at hand, warm water, must be applied for a considerable time. A clyster made of this decoction, with a large spoonful of butter, and an ounce or two of salt, may be afterwards thrown up. If these should not prove successful, recourse must be had to pressure. If the tumor be very hard, considerable force will be necessary; but it is not force alone which succeeds here. The operator, at the same time that he makes a pressure with the palms of his hands, must with his fingers artfully conduct the bowel in by the same aperture through which it came out. The manner of doing this can be much easier conceived than described. Should these endeavors prove ineffectual, clysters of the smoke of tobacco may be tried. These have been often known to succeed where every other method failed.

There is reason to believe that, by persisting in the use of these, and such other means as the circumstances of the case may suggest, most *hernias* might be reduced without an operation. Operating for the *hernia* is a difficult matter. I would therefore advise surgeons to try every method of returning the bowel before they have recourse to the knife. I have once and again succeeded by persevering in my endeavors, after eminent surgeons had declared the reduction of the bowel impracticable without an operation.*

An adult, after the bowel has been returned, must wear a proper truss. It is needless to describe this, as it may always be had ready-made from the artists. Such bandages are generally uneasy to the wearer for some time, but by custom they become quite easy. No person who has had a rupture after he arrived at man's estate should ever be without one of these bandages.

Persons who have a rupture ought carefully to avoid all violent exercise, carrying great weights, leaping, running, and the like. They should likewise avoid windy aliment and strong liquors; and should carefully guard against catching cold.

[Five or six years since, an old gentleman, named Stagner, a farmer, residing in Mercer county, Kentucky, accidentally discovered a *radical cure* for hernia. It would be useless to describe the truss by which the cure is effected, as he has a patent which secures to him and his agents and assignees the sole right to use it. Since Stagner's discovery, several valuable improvements have been made on the truss, particularly by Dr. Chase of Philadelphia, and Dr. Price of Nicholasville, Kentucky. The subjects of hernia are earnestly recommended to use the truss of some one of those gentlemen, as they seldom fail to perform a perfect cure in the worst cases, even though of many years' standing.]

CASUALTIES.

It is certain that life, when to all appearance lost, may often, by due care, be restored. Accidents frequently prove fatal, merely

* I would here beg leave to recommend to every practitioner, when his patient complains of pain in the belly with obstinate costiveness, to examine the groins, and every place where a rupture may happen, in order that it may be immediately reduced. By neglecting this, many perish who were not suspected to have had ruptures till after they were dead. I have known this happen where half a dozen of the faculty were in attendance.

because proper means are not used to counteract their effects. No person ought to be looked upon as dead from any accident, unless where the structure of the heart, brain, or some organ necessary to life, is evidently destroyed. The functions of these organs may be so far impaired, as even to be for some time imperceptible, when life is by no means extinct. In this case, however, if the fluids be suffered to grow cold, it will be impossible to put them again in motion, even though the solids should recover their power of acting. Thus, when the motion of the lungs has been stopped by unwholesome vapor; the action of the heart by a stroke on the breast; or the functions of the brain by a blow on the head, if the person be suffered to grow cold, he will in all probability continue so; but, if the body be kept warm, as soon as the injured part has recovered its power of acting, the fluids will again begin to move, and all the vital functions will be restored.

It is a horrid custom immediately to consign over to death every person who has the misfortune, by a fall, a blow, or the like, to be deprived of the appearance of life. The unhappy person, instead of being carried into a warm house, and laid by the fire, or put to a warm bed, is generally hurried away to a church or a barn, or some other cold damp house, where, after a fruitless attempt has been made to bleed him, perhaps by one who knew nothing of the matter, he is given over for dead, and no farther notice taken of him. This conduct seems to be the result of ignorance, supported by an ancient superstitious notion, which forbids the body of any person killed by accident to be laid in a house that is inhabited. What the ground of this superstition may be, we shall not pretend to enquire; but surely the conduct founded upon it is contrary to all the principles of reason, humanity, and common sense.

When a person seems to be suddenly deprived of life, our first business is to enquire into the cause. We ought carefully to observe whether any substance be lodged in the wind-pipe or gullet; and, if that is the case, attempts must be made to remove it. When unwholesome air is the cause, the patient ought immediately to be removed out of it. If the circulation be suddenly stopped, from any cause whatever, except mere weakness, the patient should be bled. If the blood does not flow, he may be immersed in warm water, or rubbed with warm cloths, &c. to promote the circulation. When the cause cannot be suddenly removed, our great aim must be to keep up the vital warmth, by rubbing the patient with hot cloths, or salt, and covering his body with warm sand, ashes, or the like.

I should now proceed to treat more fully of those accidents, which, without immediate assistance, would often prove fatal, and to point out the most likely means for relieving the unhappy sufferers; but as I have been happily anticipated in this part of my subject by the learned and humane Dr. Tissot, I shall content myself with collecting such of his observations as seem to be the most important, and adding such of my own as have occurred in the course of practice.

OF SUBSTANCES STOPPED BETWEEN THE MOUTH AND STOMACH.

THOUGH accidents of this kind are very common, and extremely dangerous, yet they are generally the effect of carelessness. Children should be taught to chew their food well, and to put nothing into their mouths which it would be dangerous for them to swallow. But children are not the only persons guilty of this piece of imprudence. I know many adults who put pins, nails, and other sharp-pointed substances in their mouths upon every occasion, and some who even sleep with the former there all night. This conduct is exceedingly injudicious, as a fit of coughing, or twenty other accidents, may force over the substance before the person is aware.*

When any substance is detained in the gullet there are two ways of removing it; viz. either by extracting it or pushing it down. The safest and most certain way is to extract it; but this is not always the easiest: it may, therefore, be more eligible sometimes to thrust it down, especially when the obstructing body is of such a nature that there is no danger from its reception into the stomach. The substances, which may be pushed down without danger, are, all common nourishing ones, as bread, flesh, fruits, and the like. All indigestible bodies, as cork, wood, bones, or pieces of metal, ought, if possible, to be extracted, especially if these bodies be sharp-pointed, as pins, needles, fish-bones, bits of glass, &c.

When such substances have not passed in too deep, we should endeavor to extract them with our fingers; which method often succeeds. When they are lower we must make use of nippers, or a small pair of forceps, such as surgeons use. But this attempt to extract rarely succeeds, if the substance be of a flexible nature, and has descended far into the gullet.

If the fingers and pincers fail, or cannot be duly applied,

* A woman in one of the hospitals of this city lately discharged a great number of pins, which she had swallowed in the course of her business, through an ulcer in her side.

crotchets, a kind of hooks, must be employed. These may be made at once, by bending a piece of pretty strong iron wire at one end. It must be introduced in the flat way; and, for the better conducting it, there should likewise be a curve or bending at the end it is held by, to serve as a kind of handle to it; which has this farther use, that it may be secured by a string tied to it; a circumstance not to be omitted in any instrument employed on such occasions, to avoid such ill-accidents as have sometimes ensued from these instruments slipping out of the operator's hand. After the crotchet has passed below the substance that obstructs the passage, it is drawn up again, and hooks up the body along with it. The crotchet is also very convenient when a substance somewhat flexible, as a pin or fish-bone, sticks across the gullet, the hook, in such cases, seizing them about their middle part, crooks and thus disengages them; or, if they are very brittle substances, serves to break them.

When the obstructing bodies are small, and only stop up a part of the passage, and which may either easily elude the hook, or straighten it by their resistance, a kind of rings, made either of wire, wool, or silk, may be used. A piece of fine wire of a proper length may be bent into a circle, about the middle, of about an inch diameter, and the long unbent sides brought parallel, and near each other: these are to be held in the hand, and the circular part or ring introduced into the gullet, in order to be conducted about the obstructing body, and so to extract it. More flexible rings may be made of wool, thread, silk, or small pack-thread, which may be waxed for their greater strength and consistence. One of these is to be tied fast to a handle of iron wire, whalebone, or any kind of flexible wood, and by this means introduced, in order to surround the obstructing substance, and to draw it out. Several of these rings passed through one another may be used, the more certainly to lay hold of the obstructing body, which may be involved by one, if another should miss it. These rings have one advantage, which is, that when the substance to be extracted is once laid hold of, it may then, by turning the handle, be retained so strongly in the ring thus twisted, as to be moved every way, which must in many cases be a considerable advantage.

Another material employed on these unhappy occasions is the sponge. Its property of swelling considerably on being wet is the principal foundation of its usefulness here. If any substance is stopped in the gullet, but without filling up the whole passage, a bit of sponge may be introduced into that part which is unstopped,

and beyond the substance. The sponge soon dilates, and grows larger in this moist situation; and, indeed, the enlargement of it may be forwarded by making the patient swallow a few drops of water. Afterwards it is to be drawn back by the handle to which it is fastened; and as it is now too large to return through the small cavity by which it was conveyed in, it draws out the obstructing body along with it.

The compressibility of sponge is another foundation of its usefulness in such cases. A pretty large piece of sponge may be compressed or squeezed into a small size, by winding a string of tape closely about it, which may be easily unwound and withdrawn, after the sponge has been introduced. A bit of sponge may likewise be compressed by a piece of whalebone split at one end; but this can hardly be introduced in such a manner as not to hurt the patient.

I have often known pins and other sharp bodies, which had stuck in the throat, brought up by causing the person to swallow a bit of tough meat tied to a thread, and drawing it quickly up again. This is safer than swallowing sponge, and will often answer the purpose equally well.

When all these methods prove unsuccessful, there remains one more, which is, to make the patient vomit: but this can scarcely be of any service, unless when such obstructing bodies are simply engaged in, and not hooked or stuck into the sides of the gullet, as in this case vomiting might sometimes occasion farther mischief. If the patient can swallow, vomiting may be excited by taking half a drachm or two scruples of ipecacuanha in powder made into a draught. If he is not able to swallow, an attempt may be made to excite vomiting, by tickling his throat with a feather; and, if that should not succeed, a clyster of tobacco may be administered. It is made by boiling a drachm of tobacco in twelve ounces of water. This has often been found to succeed, when other attempts to excite vomiting had failed.

When the obstructing body is of such a nature that it may with safety be pushed downwards, this may be attempted by means of a wax-candle oiled, and a little heated, so as to make it flexible; or a piece of whalebone, wire, or flexible wood, with a sponge fastened to one end.

Should it be impossible to extract even those bodies which it is dangerous to admit into the stomach, we must then prefer the least of two evils, and rather run the hazard of pushing them down, than suffer the patient to perish in a few minutes; and we ought

to scruple the resolution the less, as a great many instances have happened, where the swallowing of such hurtful and indigestible substances has been followed by no disorder.

Whenever it is manifest that all endeavors either to extract or push down the substance must prove ineffectual, they should be discontinued: because the inflammation occasioned by persisting in them might be as dangerous as the obstruction itself. Some have died in consequence of the inflammation, even after the body which caused the obstruction had been entirely removed.

While the means recommended above are making use of, the patient should often swallow, or, if he cannot, he should frequently receive by injection, through a crooked tube or pipe that may reach down to the gullet, some emollient liquor, as warm milk and water, barley-water, or a decoction of mallows. Injections of this kind not only soften and soothe the irritated parts, but, when thrown in with force, are often more successful in loosening the obstruction than all attempts with instruments.

When, after all our endeavors, we are obliged to leave the obstructing body in the part, the patient must be treated as if he had an inflammatory disease. He should be bled, kept upon a low diet, and have his whole neck surrounded with emollient poultices. The like treatment must also be used, if there be any reason to suspect an inflammation of the passages, though the obstructing body be removed.

A proper degree of agitation has sometimes loosened the inhering body more effectually than instruments. Thus a blow on the back has often forced up a substance which stuck in the gullet; but this is still more proper and efficacious when the substance gets into the windpipe. In this case, vomiting and sneezing are likewise to be excited. Pins, which stuck in the gullet, have been frequently discharged by riding on horseback, or in a carriage.

When any indigestible substance has been forced down into the stomach, the patient should use a very mild and smooth diet, consisting chiefly of fruits and farinaceous substances, as puddings, pottage, and soups. He should avoid all heating and irritating things, and his drink should be milk and water, barley-water, or whey.

When the patient is in danger of being immediately suffocated, and all hope of freeing the passage is vanished, so that death seems at hand, if respiration be not restored, the operation of *tracheotomy*, or opening of the windpipe, must be directly performed. As this operation is neither difficult to an expert surgeon,

nor very painful to the patient, and is often the only method which can be taken to preserve life in these emergencies, we thought proper to mention it, though it should only be attempted by surgeons skilled in anatomy.

SUSPENDED ANIMATION AND RESUSCITATION.

DROWNED PERSONS.—When a person has remained above a quarter of an hour under water, there can be no considerable hopes of his recovery. But as several circumstances may happen to have continued life, in such an unfortunate situation, beyond the ordinary term, we should never too soon resign the unhappy object to his fate, but try every method for his relief, as there are many well attested proofs of the recovery of persons to life and health who had been taken out of the water apparently dead, and who remained a considerable time without exhibiting any signs of life.

The first thing to be done, after the body is taken out of the water, is to convey it as soon as possible to some convenient place where the necessary operations for its recovery may be performed. In doing this, care must be taken not to bruise or injure the body, by carrying it in any unnatural posture, with the head downwards, or the like. If an adult body, it ought to be laid on a bed, or on straw, with the head a little raised, and carried on a cart or on men's shoulders, and kept in as natural and easy a position as possible. A small body may be carried in the arms.

In attempting to recover persons apparently drowned, the principal intention to be pursued is, *to restore, by gradual means, the natural warmth*, upon which all the vital functions depend, and to excite these functions by the applications of stimulants, not only to the skin, but likewise to the lungs, intestines, &c.

A high degree of heat will not be necessary; a moderate degree will be sufficient. If the weather be under the freezing point, and the body, when stripped, feel cold, and nearly in the same condition with the water that is frozen, it will be necessary at first to rub it well with snow, or wash it with cold water; the sudden application of heat in such cases having been found very pernicious. In a short time, however, warmth must be gradually applied.

Though cold was by no means the cause of the person's death, yet it will prove an effectual obstacle to his recovery. For this reason, after stripping him of his wet clothes, his body must be strongly rubbed for a considerable time with coarse linen cloths, as warm as they can be made; and as soon as a well heated bed can be got ready, he may be laid in it, and the rubbing should be continued. Warm cloths ought likewise to be frequently applied to the stomach and bowels, and hot bricks, or bottles of warm water, to the soles of his feet, and to the palms of his hands.

After the restoration of heat, volatile spirits should be frequently applied to the nose; and the spine of the back and pit of the stomach may be rubbed with warm brandy, or spirit of wine. The temples ought also to be chafed with volatile spirits; and stimulating powders, as that of tobacco or majoram, may be blown up the nostrils.

To renew the breathing, in the absence of a better apparatus, a strong person may blow his own breath into the patient's mouth with all the force he can, holding his nostrils at the same time. When it can be perceived by the rising of the chest or belly that the lungs are filled with air, the person ought to desist from blowing, and should press the breast and belly so as to expel the air again; and this operation may be repeated for some time, alternately inflating and depressing the lungs, so as to imitate natural respiration.

If the lungs cannot be inflated in this manner, it may be attempted by blowing through one of the nostrils, and at the same time keeping the other close. Dr. Monro, for this purpose, recommends a wooden pipe fitted at one end for filling the nostrils, and at the other for being blown into by a person's mouth, or for receiving the pipe of a pair of bellows, to be employed for the same purpose, if necessary.

When air cannot be forced into the chest by the mouth or nose, it may be necessary to make an opening into the windpipe for this purpose. It is needless, however, to spend time in describing this operation, as it should not be attempted unless by persons skilled in surgery.

It was the practice, some time ago, to employ the smoke of tobacco; but this, instead of answering any good purpose, has proved injurious, by further depressing the vital principle. Instead of this, therefore, a clyster is recommended, consisting of a pint or more of water, moderately warmed, to which may be added a little volatile spirit, essence of peppermint, or rectified spirit.

While these things are doing, some of the attendants ought to be preparing a warm-bath, into which the person should be put, if the above endeavors prove ineffectual. Where there are no conveniences for using the warm-bath, the body may be covered with warm sand, ashes, or corn. Tissot mentions an instance of a girl who was restored to life, after she had been taken out of the water, swelled, bloated, and to all appearance dead, by laying her naked body upon hot ashes, covering her with others equally hot, putting a bonnet upon her head, and a stocking round her neck, stuffed with the same, and heaping coverings over all. After she had remained half an hour in this situation, her pulse returned, she recovered speech, and cried out, *I freeze, I freeze*: a little cherry brandy was given her, and she remained buried, as it were, under the ashes for eight hours: afterwards she was taken out, without any other complaint, except that of lassitude or weariness, which went off in a few days. The Doctor mentions likewise an instance of a man who was restored to life, after he had remained six hours under water, by the heat of a dunghill.*

When there is reason to suppose that the skin has, in some degree, recovered its sensibility, the wrists, ancles, temples, and parts over the stomach and heart may be rubbed with a little volatile liniment, which will evaporate but slowly, and produce no cold on being rubbed in. In cases of suspended animation, it has likewise been usual to stimulate the stomach and intestines; the former by means of some moderately warm liquor, introduced into it through a flexible tube, and the latter by means of injections.

Till the patient show some signs of life, and is able to swallow, it would be useless and even dangerous to pour liquors into his mouth. His lips, however, and tongue may be frequently wet with a feather, dipped in warm brandy or other strong spirits; and, as soon as he has recovered the power of swallowing, a little warm wine, or some other cordial, ought every now and then to be administered.

Some recommend a vomit after the patient is a little reanimated; but if he can be made to puke without the sickening draught, it will be more safe: this may generally be done by tickling the throat and fauces with an oiled feather, or some other soft substance,

* From some late experiments made by Professor Aldini, of the university of Bologna, on the body of a malefactor, it would appear that galvanism, as an auxiliary, promises great advantages to the interests of humanity, in cases of drowning and other instances of suspended animation. With this view, also, electricity is sometimes resorted to; unless, however, employed by insulation alone, it will be more likely to do harm than good.

which will not injure the parts. Tissot, in this case, recommends the oxymel of squills, a table-spoonful of which, diluted with water, may be given every quarter of an hour, till the patient has taken five or six doses. Where that medicine is not at hand, a strong infusion of sage, camomile-flowers, or *carduus benedictus*, sweetened with honey, or some warm water, with the addition of a little salt, may, he says, supply its place. The Doctor does not intend that any of these things should be given in such quantity as to occasion vomiting. He thinks emetics, in this situation, are not expedient.

We are by no means to discontinue our assistance as soon as the patients discover some tokens of life, since they sometimes expire after these first appearances of recovering. The warm and stimulating applications are still to be continued, and small quantities of some cordial liquor ought frequently to be administered. Lastly, though the person should be manifestly reanimated, there sometimes remains an oppression, a cough, and feverishness, which effectually constitute a disease. In this case, it will be necessary to bleed the patient in the arm, and to cause him to drink plentifully of barley-water, elder-flower tea, or any other soft pectoral infusion.

Such persons as have the misfortune to be deprived of the appearance of life by a fall, a blow, suffocation, or the like, must be treated nearly in the same manner as those who have been for some time under water. I once attended a patient who was so stunned by a fall from a horse, that for above six hours he scarcely exhibited any signs of life; yet this man, by being bled, and proper methods taken to keep up the vital warmth, recovered, and in a few days was perfectly well. Dr. Alexander gives an instance to the same purpose, in the Edinburgh Physical and Literary Essays, of a man who was to all appearance killed by a blow on the breast, but recovered upon being immersed for some time in warm water. These and other instances of a similar nature, which might be adduced, amount to a full proof of this fact, that many of those unhappy persons who lose their lives by falls, blows, and other accidents, might be saved *by the use of proper means duly persisted in.*

NOXIOUS VAPORS.

AIR may be many ways rendered noxious, or even destructive to animals. This may either happen from its vivifying principle being destroyed, or from subtle exhalations with which it is impregnated. Thus air that has passed through burning fuel is neither capable of supporting fire nor the life of animals. Hence the danger of sleeping in close chambers with coal fires. Indeed, it is dangerous to sleep in a small apartment with a fire of any kind. I lately saw four persons who had been suffocated by sleeping in an apartment where a small fire of coal had been left burning.

The vapor which exhales from wine, cider, beer, or other liquors, in the state of fermentation, is poisonous, and kills in the same manner as the vapor of coal. Hence there is always danger in going into cellars where a large quantity of these liquors is in a state of fermentation, especially if they have been close shut up for some time. There have been many instances of persons struck dead on entering such places, and of others who have with difficulty escaped.

When subterraneous caves, that have been very long shut, are opened, or when deep wells are cleaned, which have not been emptied for several years, the vapors arising from them produce the same effects as those mentioned above. For this reason, no person ought to venture into a well, pit, cellar, or any place that is damp, and has been long shut up, till the air has been sufficiently purified, by burning gunpowder in it. It is easy to know, as has been observed in a former part of this work, when the air of such places is unwholesome, by letting down a lighted candle, throwing in burning fuel, or the like. If these continue to burn, people may safely venture in; but where they are suddenly extinguished, no one ought to enter till the air has been first purified by fire.

[That wells are so often fatal to those who enter them, is owing to the tendency of the poisonous gas (carbonic acid) towards the lowest accessible cavities. This gas may be displaced from such situations, by mechanical agitation, by means of any bulky body alternately raised and depressed quickly. Any very inflammable matter, lowered while in a burning state, as a cloth dipped in spirit of wine, or turpentine, would dislodge the gas, if not let down into it so quickly as to be extinguished. The firing of guns into the well, might be useful. Moistened gunpowder, in the same state

as in the squibs made by boys, might be worthy of trial. An ounce of gunpowder might be spread over the bottom of a bucket, lowered into the well, and ignited by letting a squib, burning coal, or red-hot iron fall into it. (Hare.) Dashing repeated bucketfuls of fresh water into wells, will free them of foul air. Throwing down burning straw will also have the same effect. Sprinkling lime over the floors of cellars, and other places where foul air is likely to be generated, will afford protection.]

The offensive smell of lamps and of candles, especially when their flames are extinguished, operate like other vapors, though with less violence, and less suddenly. There have, however, been instances of people killed by the fumes of lamps which had been extinguished in a close chamber; and persons of weak, delicate breasts, generally find themselves quickly oppressed in apartments illuminated with many candles.

Such as are sensible of their danger in these situations, and retreat seasonably from it, are generally relieved as soon as they get into the open air, or, if they have any remaining uneasiness, a little water and vinegar, or lemonade, drank hot, affords them relief. But when they are so far poisoned as to have lost their feeling, and understanding, the following means must be used for their recovery: —

The patient should be exposed to a very pure, fresh, and open air; and volatile salts, or other stimulating substances, held to his nose. He should next be bled in the arm, or, if that does not succeed, in the neck. His legs ought to be put into warm water, and well rubbed. As soon as he can swallow, some lemonade, or water and vinegar, with the addition of a little nitre, may be given him.

Nor are sharp clysters by any means to be neglected; these may be made, by adding to the common clyster, syrup of buckthorn and tincture of senna, of each two ounces; or, in their stead, half an ounce of Venice turpentine dissolved in the yolk of an egg. Should these things not be at hand, two or three large spoonfuls of common salt may be put into the clyster. The same means, if necessary, which were recommended in the former part of this chapter, may be used to restore the circulation and warmth.

Mr. Tossach relates the case of a man suffocated by the steam of burning coal, whom he recovered by blowing his breath into the patient's mouth, bleeding him in the arm, and causing him to be rubbed and tossed about. And Dr. Frewen mentions the case of a young man who was stupified by the smoke of sea-coal, but

was recovered by being plunged into cold water, and afterwards laid in a warm bed.

The practice of plunging persons suffocated by noxious vapors in cold water would seem to be supported by the common experiment of suffocating dogs in the *Grotto del Cani*, and afterwards recovering them by throwing them into the neighboring lake.

When a person dies from suffocation, the symptoms are nearly the same as in apoplexy.

EFFECTS OF EXTREME COLD.

WHEN cold is extremely severe, and a person is exposed to it for a long time, it proves mortal, in consequence of its stopping the circulation in the extremities, and forcing too great a proportion of blood towards the brain; so that the patient dies of a kind of apoplexy, preceded by great sleepiness. The traveller, in this situation, who finds himself begin to grow drowsy, should redouble his efforts to extricate himself from the imminent danger he is exposed to. This sleep, which he might consider as some alleviation of his sufferings, would, if indulged, prove his last.

Such violent effects of cold are happily not very common in this country: it frequently happens, however, that the hands or feet of travellers are so benumbed or frozen, as to be in danger of a mortification, if proper means are not used to prevent it. The chief danger in this situation arises from the sudden application of heat. It is very common, when the hands or feet are pinched with cold, to hold them to the fire; yet reason and observation show, that this is a most dangerous and imprudent practice.

Every peasant knows, if frozen meat, fruits, or roots of any kind, be brought near the fire, or put into warm water, they will be destroyed by rottenness, or a kind of mortification; and that the only way to recover them, is to immerse them for some time in very cold water. The same observation holds with regard to animals in this condition.

When the hands or feet are greatly benumbed with cold, they ought either to be immersed in cold water, or rubbed with snow, till they recover their natural warmth and sensibility: after which, the person may be removed into an apartment a little warmer, and may drink some cups of tea, or an infusion of elder-flowers, sweet-

ened with honey. Every person must have observed, when his hands were even affected but slightly with cold, that the best way to warm them was by washing them in cold water, and continuing to rub them well for some time.

When, therefore, the hands, feet or nose, or any other part of the body have been exposed to violent cold, so as to be frost-bitten, they ought at first either to be well rubbed with snow, or be put into cold water, and afterwards be subjected to warmth in the most gentle and gradual manner.

When a person has been so long exposed to the cold, that all appearances of life are gone, it will be necessary to rub him all over with snow or cold water; or, what will answer better, if it can be obtained, to immerse him in a bath of the very coldest water. There is the greatest encouragement to persist in the use of these means, as we are assured that persons who had remained in the snow, or had been exposed to the freezing air during five or six successive days, and who had discovered no marks of life for several hours, have nevertheless been revived.

If the power of swallowing be restored, some warm and gently stimulating drink should be given, such as thin broth, with a little brandy in it, or water with some wine, administered by a spoonful at a time. While the body is cold, and the circulation and respiration are languid, blood-letting might be improper. If, however, after these functions, and the natural temperature are restored, the patient should remain any time in a comatose state, with a strong full pulse, the propriety and necessity of venesection can hardly be doubted.

I have always thought, that the whitloes, kibes, chilblains, and other inflammations of the extremities, which are so common in the cold seasons, were chiefly occasioned by their sudden transitions from cold to heat. After they have been exposed to an extreme degree of cold, they immediately apply their hands and feet to the fire, or, if they have occasion, plunge them into warm water, by which means, if a mortification does not happen, an inflammation seldom fails to ensue. Most of the ill consequences from this quarter might be easily avoided, by only observing the precautions mentioned above.

EFFECTS OF EXTREME HEAT.

THE effects of extreme heat, though not so common in this country, are no less fatal, and much more sudden than those of cold. In hot countries people frequently drop down dead in the streets, exhausted with heat and fatigue. In this case, if any warm cordial can be poured into the mouth, it ought to be done. If this cannot be effected, they may be thrown up in form of a clyster. Volatile spirits, and other things of a stimulating nature, may be applied to the skin, which should be well rubbed with coarse cloths, whipped with nettles, or other stimulating things. Some of the ancient physicians are said to have restored to life persons apparently dead, by beating them with rods.

Head-aches are often occasioned by exposure to intense heat; and in warm climates, where people are very liable to what they call *coups de soleil*, or strokes of the sun, it is a common custom to lay linen cloths, several times doubled, on the head, and to keep them moistened with very cold water for half an hour, or till the stupor is diminished. This they term *drawing the fire out of the head*.

FAINTING FITS.—SYNCOPE.

STRONG and healthy persons, who abound with blood, are often seized with sudden fainting fits, after violent exercise, drinking freely of warm or strong liquors, exposure to great heat, or intense application to study.

In such cases the patient ought to be made to smell to some vinegar. His temples, forehead, and wrists, ought at the same time to be bathed with vinegar mixed with an equal quantity of warm water; and two or three spoonfuls of vinegar, with four or five times as much water, may, if he can swallow, be poured into his mouth.

If the fainting proves obstinate, or degenerates into a *syncope*, that is, an abolition of feeling and understanding, the patient must be bled. After the bleeding, a clyster will be proper, and then he should be kept easy and quiet, only giving him every half-hour a

cup or two of an infusion of any mild vegetable, with the addition of a little sugar and vinegar.

When swoonings, which arise from this cause, occur frequently in the same person, he should, in order to escape them, confine himself to a light diet, consisting chiefly of bread, fruits, and other vegetables. His drink ought to be water or small beer, and he should sleep but moderately, and take much exercise.

But fainting fits proceed much oftener from a defect than an excess of blood. Hence they are very ready to happen after great evacuations of any kind, obstinate watching, want of appetite, or the like. In these, an almost directly opposite course to that mentioned above must be pursued.

The patient should be laid in bed, with his head low, and being covered, should have his legs, thighs, arms, and his whole body rubbed strongly with hot flannels. Hungary-water, volatile salts, or strong smelling herbs, as rue, mint, or rosemary, may be held to his nose. His mouth may be wet with a little rum or brandy; and, if he can swallow, some hot wine mixed with sugar and cinnamon, which is an excellent cordial, may be poured into his mouth. A compress of flannel dipt in hot wine or brandy must be applied to the pit of his stomach, and warm bricks, or bottles filled with hot water laid to his feet.

As soon as the patient is recovered a little, he should take some strong soup or broth, or a little bread or biscuit soaked in hot-spiced wine. To prevent the return of the fits, he ought to take often, but in small quantities, some light yet strengthening nourishment, as panada made with soup instead of water, newlaid eggs lightly poached, chocolate, light roast meats, or jellies.

Those fainting fits, which are the effect of bleeding, or of the violent operation of purges, belong to this class. Such as happen after artificial bleeding are seldom dangerous, generally terminating as soon as the patient is laid upon the bed; indeed, persons subject to this kind should always be bled lying, in order to prevent it. Should the fainting, however, continue longer than usual, volatile spirits may be held to the nose, and rubbed on the temples.

When fainting is the effect of too strong or acrid purges or vomits, the patient must be treated in all respects as if he had taken poison. He should be made to drink plentifully of milk, warm water, and oil, or barley-water. emollient clysters will likewise be proper, and the patient's strength should afterwards be recruited, by giving him generous cordials, and anodyne medicine.

Faintings are often occasioned by indigestion. This may either

proceed from the quantity or quality of the food. When the former of these is the cause, the cure will be best performed by vomiting, which may be promoted by causing the patient to drink a weak infusion of camomile flowers. When the disorder proceeds from the nature of the food, the patient, as in the case of weakness, must be revived by strong smells, &c.; after which he should be made to swallow a large quantity of light warm fluid, which may serve to drown, as it were, the offending matter, to soften its acrimony, and either to effect a discharge of it by vomiting, or force it down into the intestines.

Even disagreeable smells will sometimes occasion swoonings, especially in people of weak nerves. When this happens, the patient should be carried into the open air, have stimulating things held to his nose, and those substances which are disagreeable to him ought immediately to be removed. But we have already taken notice of swoonings which arise from nervous disorders, and shall therefore say no more upon that head.

Fainting fits often happen in the progress of diseases. When they occur at the beginning of malignant fevers, they indicate great danger. In such cases, vinegar used both externally and internally is the best remedy during the paroxysm, and plenty of lemon-juice and water after it. Swoonings which happen in diseases accompanied with great evacuations must be treated like those which are owing to weakness, and the evacuations ought to be restrained. When they happen towards the end of a violent fit of an intermitting fever, or at that of each exacerbation of a continual fever, the patient must be supported by small draughts of wine and water.

Delicate and hysteric women are very liable to swooning or fainting fits after delivery. These might be often prevented by generous cordials, and the admission of fresh air. When they are occasioned by excessive flooding, it ought by all means to be restrained. They are generally the effect of mere weakness or exhaustion. Dr. Engleman relates the case of a woman "in childbed, who, after being happily delivered, suddenly fainted, and lay upwards of a quarter of an hour apparently dead. A physician was sent for; her own maid, in the meanwhile, being out of patience at his delay, attempted to assist her herself, and extending herself upon her mistress, applied her mouth to hers, blew in as much breath as she possibly could, and in a very short time the exhausted woman awaked as out of a profound sleep when, proper things being given her, she soon recovered."

“The maid being asked how she came to think of this expedient, said, she had seen it practised by midwives, upon children, with the happiest effect.”

We mention this case chiefly that other midwives may be induced to follow so laudable an example. Many children are born without any signs of life, and others expire soon after the birth, who might, beyond all doubt, by proper care, have been restored to life.

From whatever cause fainting fits proceed, fresh air is always of the greatest importance to the patient. By not attending to this circumstance, people often kill their friends while they are endeavoring to save them. Alarmed at the patient's situation, they call in a crowd of people to his assistance, or perhaps to witness his exit, whose breathing exhausts the air, and increases the danger. There is not the least doubt but this practice, which is very common among the lower sort of people, often proves fatal, especially to the delicate, and such persons as fall into fainting fits from mere exhaustion, or the violence of some disease. No more persons ought ever to be admitted into the room where a patient lies in a swoon than are absolutely necessary for his assistance, and the windows of the apartment should always be opened, at least as far as to admit a stream of fresh air.

Persons subject to frequent swoonings, or fainting fits, should neglect no means to remove the cause of them, as their consequences are always injurious to the constitution. Every fainting fit leaves the person in dejection and weakness; the secretions are suspended, the humors disposed to stagnation, and obstructions are formed. The only kind of swoonings not to be dreaded are those which sometimes mark the *crisis* in fevers; yet even these ought, as soon as possible, to be removed.

I have before remarked, but I deem it of importance to repeat the observation, that it is only when the fainting fit evidently arises from a fulness of the habit, and is accompanied with a total abolition of feeling and understanding, that bleeding is advisable. The use of the lancet might otherwise have the most deadly effect. Many persons, even of robust constitutions, are very apt to faint upon having a vein opened and losing a little blood. How dangerous, then, must the operation be, when a patient has already fainted, and most probably from extreme weakness and a defect of blood! I have no doubt but many a murder has been rashly committed in such cases.

INTOXICATION.

THE effects of intoxication are often fatal. No kind of poison kills more certainly than an overdose of ardent spirits. Sometimes, by destroying the nervous energy, they put an end to life at once; but in general their effects are more slow, and in many respects similar to those of opium. Other kinds of intoxicating liquors may prove fatal when taken to excess, as well as ardent spirits; but they may generally be discharged by vomiting, which ought always to be excited when the stomach is overcharged with liquor.

More of those unhappy persons who die intoxicated, lose their lives from an inability to conduct themselves, than from the destructive quality of the liquor. Unable to walk, they tumble down, and lie in some awkward posture, which obstructs the circulation or breathing, and often continue in this situation till they die. No person, when drunk, should be left by himself, till his clothes have been loosened, and his body laid in such a posture as is most favorable for continuing the vital motions and discharging the contents of the stomach. The best posture for discharging the contents of the stomach is to lay the person upon his belly; when asleep, he may be laid on his side, with his head a little raised, and particular care must be taken that his neck be not bent, twisted, or have any thing too tight about it.

The excessive degree of thirst occasioned by drinking strong liquors often induces people to quench it by taking what is hurtful. I have known fatal consequences even from drinking freely of milk after a debauch of wine or sour punch; these acid liquors, together with the heat of the stomach, having coagulated the milk in such a manner that it could never be digested. The safest drink after a debauch is water with toast, tea, infusions of balm, sage, and barley-water. If the person wants to vomit, he may drink a weak infusion of camomile flowers or luke-warm water and oil; but in this condition, vomiting may generally be excited by only tickling the throat with the finger or a feather.

Instead of giving a detail of all the different symptoms of intoxication which indicate danger, and proposing a general plan of treatment for persons in this situation, I shall briefly relate the history of a case which lately fell under my own observation, wherein most of those symptoms usually reckoned dangerous occurred, and where the treatment was successful.

A young man, about fifteen years of age, had, for hire, drank ten glasses of strong brandy. He soon after fell asleep, and continued in that situation for several hours, till at length his uneasy manner of breathing, the coldness of the extremities, and other threatening symptoms, alarmed his friends, and made them send for me. I found him still sleeping, his countenance ghastly, and his skin covered with a cold clammy sweat. Almost the only signs of life remaining were, a deep laborious breathing, and a convulsive motion or agitation of his bowels.

I tried to rouse him, but in vain, by pinching, shaking, and applying volatile spirits, and other stimulating things to his nose. A few ounces of blood were likewise taken from his arm, and a mixture of vinegar and water was poured into his mouth; but as he could not swallow, very little of this got into the stomach. None of these things having the least effect, and the danger seeming to increase, I ordered his legs to be put into warm water, and a sharp clyster to be immediately administered. This gave him a stool, and was the first thing that relieved him. It was afterwards repeated with the same happy effect, and seemed to be the chief cause of his recovery. He then began to show some signs of life, took drink when it was offered him, and came gradually to his senses. He continued, however, for several days weak and feverish, and complained much of a soreness, in his bowels, which gradually went off, by means of a slender diet, and cool mucilaginous liquors.

This young man would probably have been suffered to die, without any assistance being called, had not a neighbor, a few days before, who had been advised to drink a bottle of spirits to cure him of an ague, expired under very similar circumstances.*

* I have seen repeated instances of persons being restored to perfect sobriety, and the complete use of their senses, from a state of most alarming intoxication, by taking away eight or ten ounces of blood from the nape of the neck, as near the head as possible, by means of cupping-glasses. The same effect is produced by taking blood from the arm, but the practice is not perhaps quite so safe; cupping certainly deserves the preference.

SUFFOCATION AND STRANGLING,

FROM HANGING, DROWNING, AND OTHER CAUSES.

IN cases where life is suspended from hanging, the same means as recommended for drowned people are to be adopted, with the addition of opening the jugular veins, or applying cupping-glasses to the neck, which will tend considerably to facilitate the restoration of life, by lessening the quantity of blood contained in the vessels of the head, and thereby taking off the pressure from the brain. Except in persons of a full plethoric habit, the quantity drawn off need seldom exceed an ordinary tea-cupful, which in general will be sufficient to unload the vessels of the head, without weakening the powers of life.

Suffocation may sometimes proceed from an infarction of the lungs, produced by viscid, clammy humors, or a spasmodic affection of the nerves of that organ. Persons who feed grossly, and abound in rich blood, are very liable to suffocating fits from the former of these causes. Such ought, as soon as they are attacked, to be bled, to receive an emollient clyster, and to take frequently a cup of diluting liquor with a little nitre in it. They should likewise receive the steams of hot vinegar into their lungs by breathing.

Nervous and asthmatic persons are most subject to spasmodic affections of the lungs. In this case the patient's legs should be immersed in warm water, and the steams of vinegar applied as above. Warm diluting liquors should likewise be drank; to a cup of which a tea-spoonful of the paregoric elixir may occasionally be added. Burnt paper, feathers, or leather, may be held to the patient's nose, and fresh air should be freely admitted to him.

Infants are often suffocated by the carelessness or inattention of their nurses.* An infant when in bed should always be laid so, that it cannot tumble down with its head under the bed clothes; and when in a cradle, its face ought never to be covered. A small degree of attention to these two simple rules would save the lives of many infants, and prevent others from being rendered weak and sickly all their days by the injuries done to their lungs.

* These accidents are not always the effects of carelessness. I have known an infant overlaid by its mother being seized in the night with a hysteric fit. This ought to serve as a caution against employing hysteric women for nurses; and should likewise teach such women never to lay an infant in the same bed with themselves, but in a small adjacent one.

Instead of laying down a plan for the recovery of infants who are suffocated, or overlaid, as it is termed by their nurses, I shall give the history of a case related by Monsieur Janin, of the Royal College of Surgery at Paris, as it was attended with success, and contains almost every thing that can be done on such occasions.

A nurse having had the misfortune to overlay a child, he was called in, and found the infant without any signs of life; no pulsation in the arteries, no respiration, the face livid, the eyes open, dull, and tarnished, the nose full of snivel, the mouth gaping, in short it was almost cold. While some linen cloths and a parcel of ashes were warming, he had the boy unswathed, and laid him in a warm bed, and on the right side. He was then rubbed all over with fine linen, for fear of fretting his tender and delicate skin. As soon as the ashes had received their due degree of heat, Mr. Janin buried him in them, except the face, placed him on the side opposite to that on which he had been at first laid, and covered him with a blanket. He had a bottle of *eau de luce* in his pocket, which he presented to his nose from time to time and between whiles some puffs of tobacco were blown up his nostrils; to these succeeded the blowing into his mouth, and squeezing tight his nose. Animal heat began thus to be excited gradually; the pulsations of the temporal artery were soon felt, the breathing became more frequent and free, and the eyes closed and opened alternately. At length the child fetched some cries expressive of his want of the breast, which being applied to his mouth, he caught it with avidity, and sucked as if nothing had happened to him. Though the pulsations of the arteries were by this time very well re-established, and it was hot weather, yet Mr. Janin thought it advisable to leave his little patient three quarters of an hour longer under the ashes. He was afterwards taken out, cleaned and dressed as usual; to which a gentle sleep succeeded and he continued perfectly well.

Mr. Janin mentions likewise an example of a young man, who had hanged himself through despair, to whom he administered help as effectually as in the preceding case.

Mr. Glover, surgeon in Doctors' Commons, London, relates the case of a person who was restored to life after twenty-nine minutes hanging, and continued in good health for many years after.

The principle means used to restore this man to life were opening the temporal artery and the external jugular; rubbing the back, mouth, and neck with a quantity of volatile spirits and oil; administering the tobacco clyster by means of lighted pipes, and

strong frictions of the legs and arms. This course had been continued for about four hours, when an incision was made into the windpipe, and air blown strongly through a canula into the lungs. About twenty minutes after this, the blood at the artery began to run down the face, and a slow pulse was just perceptible at the wrist. The frictions were continued for sometime longer; his pulse became more frequent, and his mouth and nose being irritated with spirit of sal ammoniac, he opened his eyes. Warm cordials were then administered to him, and in two days he was so well as to be able to walk eight miles.

These cases are sufficient to show what may be done for the recovery of those unhappy persons who strangle themselves in a fit of despair.

CONVULSION-FITS.

CONVULSION-FITS often constitute the last scene of acute or chronic disorders. When this is the case, there can remain but small hopes of the patient's recovery after expiring in a fit. But when a person who appears to be in perfect health is suddenly seized with a convulsion-fit, and seems to expire, some attempts ought always to be made to restore him to life. Infants are most liable to convulsions, and are often carried off very suddenly by one or more fits about the time of teething. There are many well-authenticated accounts of infants having been restored to life, after they had to all appearance expired in convulsions; but we shall only relate the following instance mentioned by Dr. Johnson, in his pamphlet *On the Practicability of recovering Persons visibly dead*.

In the parish of *St. Clements* in *Colchester*, a child of six months old, lying upon its mother's lap, having had the breast, was seized with a strong convulsion-fit, which lasted so long, and ended with so total a privation of motion in the body, lungs and pulse, that it was deemed absolutely dead. It was accordingly stripped, laid out, the passing bell ordered to be tolled, and a coffin to be made; but a neighboring gentlewoman, who used to admire the child, hearing of its sudden death, hastened to the house, and upon examining the child, found it not cold, its joints limber, and fancied that a glass that she held to its mouth and nose

was a little damped with the breath; upon which she took the child in her lap, sat down before the fire, rubbed it, and kept it in gentle agitation. In a quarter of an hour she felt the heart begin to beat faintly; she then put a little of the mother's milk into its mouth, continued to rub its palms and soles, found the child begin to move, and the milk was swallowed; and in another quarter of an hour she had the satisfaction of restoring to its disconsolate mother the babe quite recovered, eager to lay hold of the breast, and able to suck again. The child throve, had no more fits, is grown up, and at present alive.

These means, which are certainly in the power of every person, were sufficient to restore to life an infant to all appearance dead, and who, in all probability, but for the use of these simple endeavors, would have remained so. There are, however, many other things which might be done in case the above should not succeed; as rubbing the body with strong spirits, covering it with warm ashes or salt, blowing air into the lungs, throwing up warm stimulating clysters or the smoke of tobacco into the intestines, and the like.

When children are dead-born, or expire soon after the birth; the same means ought to be used for their recovery, as if they had expired in circumstances similar to those mentioned above.

These directions may likewise be extended to adults, attention being always paid to the age and other circumstances of the patient.

The foregoing cases and observations afford sufficient proof of the success which may attend the endeavors of persons totally ignorant of medicine, in assisting those who are suddenly deprived of life by an accident or disease. Many facts of a similar nature might be adduced, were it necessary: but these, it is hoped, will be sufficient to call up the attention of the public, and to excite the humane and benevolent to exert their utmost endeavors for the preservation of their fellow-men.

The Society for the Recovery of drowned Persons, instituted at Amsterdam in the year 1767, had the satisfaction to find that no fewer than 150 persons, in the space of four years, had been saved by the means pointed out by them, many of whom owed their preservation to peasants and people of no medical knowledge. But the means used with so much efficacy in recovering drowned persons are, with equal success, applicable to a number of cases where the powers of life seem in reality to be only suspended, and to remain capable of renewing all their functions, on being put

into motion again. It is shocking to reflect, that for want of this consideration, many persons have been committed to the grave in whom the principles of life might have been revived.

The cases wherein such endeavors are most likely to be attended with success are all those called sudden deaths from an invisible cause, as apoplexies, hysterics, faintings, and many other disorders wherein persons in a moment sink down and expire. The various casualties in which they may be tried are, suffocations from the sulphureous damps of mines, coal-pits; the unwholesome air of long-unopened wells or caverns; the noxious vapors arising from fermenting liquors; the steams of burning charcoal; sulphureous mineral acids; arsenical effluvia, &c.

The various accidents of drowning, strangling, and apparent deaths, by blows, falls, hunger, cold, &c. likewise furnish opportunities of trying such endeavors. Those, perhaps, who, to appearance, are killed by lightning, or by any violent agitation of the passions, as fear, joy, or surprise, might also be frequently recovered by the use of proper means.

The means to be used for the recovery of persons suddenly deprived of life are nearly the same in all cases; they are practicable by every one who happens to be present at the accident, and require no great expense, and less skill. The great aim is to restore the warmth and vital motions. This may in general be attempted by means of heat, friction, bleeding, blowing air into the lungs, administering clysters, and generous cordials. These must be varied according to circumstances. Common sense, and the situation of the patient, will suggest the proper manner of conducting them. Above all, we would recommend *perseverance*. People ought never to despair on account of discouraging circumstances, nor to leave off their endeavors as long as there is the least hope of success. Where much good and no hurt can be done, no one ought to grudge his labor.

VENEREAL DISEASES.

SYPHILIS.—POX.

[There has been much controversy about the origin of this form of venereal disease; but it is now very generally admitted, that it was carried from America to Europe by the crew of Columbus,

and appeared first at the siege of Naples, about the year 1492. It soon gained the middle of France, and thence spread rapidly throughout all Europe; from which circumstance it was called the French pox. Many remedies were used to cure it, but with little success; and it was almost as fatal then as cholera has been for the last few years. In fact, until Paracelsus introduced the mercurial plan of treatment, it was almost universally fatal. From his day, until forty or fifty years back, mercury was the only remedy used; but since that time, many other remedies have been introduced, and highly extolled for a season.

Climate exercises a great influence over the disease. It is peculiarly mild in all low and warm countries, and is generally easily managed. It is far otherwise, however, in northern latitudes. In Sweden, Russia, &c. it is looked upon as almost certainly fatal in its termination; especially when it appears among the peasants, who are generally much exposed to the weather. The disease is variable in middle climates—it is not so violent as in northern, nor so mild as in southern countries. It is cured with more ease in summer than in winter, in all climates; in fact, it is hardly ever cured at the north except during mid-summer. The modifications of climate, and the difficulty of distinguishing syphilis from many other diseases, has given rise to the great variety of treatment which has been adopted. It is very certain, however, that *in our climate*, true pox can be only cured by one remedy—mercury.

The general outlines of a syphilitic chancre are invariable. Chancres appear at first like little red pimples, which are succeeded by small pustules filled with a transparent fluid; these break and form little spreading ulcers, which are very sore and painful, are cupped in the centre, and have ragged, prominent edges of an ash-color. They are covered with a glairy fluid, which is very tenacious of its position; are unequal at the bottom, and show no disposition whatever to heal when left to themselves, but on the contrary to spread much in every direction. The period at which chancres make their appearance after infection has been communicated is various, as sometimes they manifest themselves in six or seven days, and in others not until a fortnight or three weeks have elapsed. Sometimes there is only a single ulcer, at others two or three take place. Many of these symptoms are also present in counterfeit syphilis; but the spurious disease is further characterized by the ulcer moving forward in some one direction, and healing

behind it as it progresses. This is never seen in true pox. A chancre never presents a healing surface.

Regimen.—To cure syphilis with mercury, the only certain remedy, great attention must be paid to diet. It should consist of articles of a mild character, such as boiled milk and mush, rice, panado, and warm tea and coffee. Occasionally, a little boiled lamb or chicken would not be injurious, but it is best to abstain from meats entirely. The best drinks are toast-water, gruel, and sage, hysop, or gum-Arabic teas. A decoction of sarsaparilla may also be taken with advantage. The patient should wear flannel at all seasons, and sedulously avoid exposure to cold.

Treatment.—Local applications to the ulcers, are very commonly resorted to in the treatment of this disease, but the practice is a mischievous one. The general system is, in almost every instance, affected by the disease, and if the ulcer be made to disappear by local means, we cannot be certain that it is removed further than from the surface. Many cases have occurred, in which, after the removal of all external marks of the disease, by local applications, it has reappeared months after the apparent cure, in the most aggravated forms. On the contrary, if it is treated by the external use of mercury alone, using no local application, but warm water, and the ulcer disappears, no fears need be entertained of the return of the disease, nor any of the evils which usually attend it in its secondary forms.

The best method of curing pox is by the use of the mildest preparations of mercury—viz. blue pill or calomel. Blue pill, being the mildest is preferable. Previous to administering the calomel for its constitutional effects, the patient should be purged for two or three days with calomel and jalap in full doses. After that, one grain of calomel, or from four to six grains of blue pill, should be given night and morning, and continued until the gums become tender or slightly reddened and swollen. Its use should be suspended for a day or two, until the soreness of the gums begins to decline, and then taken again until the same effect is produced as before. This course is to be pursued until the disease is cured, keeping the gums slightly colored and tender the whole time. Six or seven days after the commencement of the treatment with the small doses of mercury, a change may be expected in the appearance of the ulcer. the edges will become level; it will cease spreading; the secretion of glairy mucus will be changed; and healthy granulations will begin to spring up. Go on with the mercury, and if the ulcer heals up under its influence,

and becomes covered with a healthy skin, it may be concluded that the cure is radical. To prevent the possibility of the cure not being complete, the remedy should be taken once a day for ten days or a fortnight after all external manifestations of the disease have disappeared.

If, however, the mercury does not affect the gums after it has been used for six or seven days, the dose must be increased one half; or even double the quantity may be taken. The remedy should never go further than to affect the gums very slightly, as salivation is always injurious. If, after giving it for some time, the gums become suddenly affected, its use must be suspended. Under this treatment, a cure will generally be effected in twenty or twenty-five days, though it sometimes requires a longer period, particularly in winter.

It may be well to state, that in all cases, where the small doses of calomel or blue pill purge, or, in other words, "run off by the bowels," small portions of opium should be combined with it.

BUBOES.

[“A bubo comes on with pain in the groin accompanied with some degree of hardness and swelling, and is at first about the size of a kidney bean, but continuing to increase, it at length becomes as large as an egg, occasions the person to experience some difficulty in walking, and is attended with a pulsation and throbbing in the tumor, and a great redness of the skin.” (Hooper.) A venereal bubo may be known, generally, by the swelling being confined to one gland; the skin of a florid red color; very acute pain; and the progress from inflammation to suppuration being rapid. The suppuration is large in proportion to the size of the gland, and there is usually but one abscess, though, in cases of long continuance, fistulous canals start from it in various directions.

As soon as a bubo makes its appearance, every means calculated to effect the object must be employed to disperse it, and prevent it from coming to suppuration. For this purpose, where the patient is not disposed to scrofula, half a drachm of mercurial ointment should be rubbed into the leg and thigh of the affected side every night before going to bed, and continued until the bubo disappears or the gums become tender. In addition to this, the patient's bowels should be thoroughly evacuated every day by

means of some of the purgatives recommended in the treatment of fever. A very spare diet is at the same time to be used, and all exercise carefully avoided. Through the day, cloths wet with a solution of sugar of lead, or with ice water, should be kept constantly applied to the swelling, taking care to re-wet them as often as they become dry and hot. At night, a poultice of linseed meal, or one of rye, may be applied cold to the swelling, and changed as often as convenient. The poultice should be moistened with lead water. This course will frequently succeed in dispersing a bubo in the first stage.

Sometimes, however, the swelling becomes stationary, neither decreasing in size, nor inclining to suppuration. In such cases the application of blisters to the swelling is attended with the most beneficial effects. The application of iodine ointment to the base of the tumor, and along the inside of the thigh, may also be resorted to with advantage.

“The suppuration of buboes frequently cannot be prevented by any known means. They are then to be treated in some respects like any other abscess.” Warm poultices of bread and milk, flax seed, slippery-elm, or mush and lard, should be applied, and renewed every four or five hours until the tumor becomes perfectly soft. It must not be allowed to break of itself, but as soon as the skin becomes thin, it should be opened by a lancet or common caustic. After the bubo has been opened, it must be poulticed for several days, or as long as the discharge and inflammation are considerable; and then resort must be had to common dressings, as basilicon ointment spread on lint, until the discharge wholly ceases. Before every dressing, it must be well washed with Castile soap and warm water. If “proud flesh” makes its appearance, it may be kept down by the occasional application of a piece of lint dipped in a weak solution of potash. When the sore assumes a perfectly healthy appearance, the cure may be perfected by the application of Turner’s cerate, or any mild healing ointment.

In scrofulous patients, much reliance may be placed on the use of iodine, as directed for scrofula. Fomentations with bruised hemlock leaves, and the internal use of nitric acid are also highly praised in such cases. Six drops of the acid, largely diluted with water, may be taken three times a-day. The diet throughout must be that recommended in syphilis.]

GONORRHŒA.—CLAP.

[THIS is an inflammatory affection of the mucous membrane of the urethra, and is communicated by a specific contagion, the virus being brought in contact with the part affected during impure commerce between the sexes. The first stage consists in a serous discharge from the urethra; which, in the latter stage, changes to pus.

The disease comes on with a tickling sensation in the urethra, which is soon succeeded by itching, and a frequent desire to make water. In some cases it is felt in twelve hours, in others, not until two or three days, or even later, after impure connection. As the disease advances, the desire to make water becomes more frequent, and the pain in voiding urine continues to increase, until it becomes almost insupportable. The stream is often bifurcated, or twisted like a gimblet, and if the urine be passed at all, it falls between the feet of the patient, from inability to project it. In a short time, a copious discharge of whitish matter takes place from the urethra, which increases for some days, becomes gradually thicker, and changes to a yellow, and often to a greenish color. Occasionally it is tinged with blood.

When the disease affects females, it is more difficult to detect than in men; because *fluor albus* or “the whites,” an affection to which females are subject, greatly resembles gonorrhœa. The discharge, pain in making water, soreness in walking, and increase of these symptoms, are common to both diseases. Dr. Dun says it may be distinguished from “the whites,” in most instances, by coming on more suddenly; and “by the great debility; the sinking of the stomach; the weariness of the limbs; the pain of the back, always increased by the erect posture; the severe headaches; the painful menstruation;” together with the very gradual increase of the symptoms experienced in *fluor albus*—none of these symptoms being common to gonorrhœa. The chief differences produced by this disease in the male and female, are the general mildness of the symptoms in the female, and the frequent extension of the inflammation to the vagina.

Treatment.—In the management of gonorrhœa, mercury is not to be used, at least for its specific effect, as in syphilis. It is never to be employed except as a purgative, in cases where great torpidity of the liver prevails, and it is desirable to excite it to action.

In the early stages of a simple clap, the very common practice of employing injections is decidedly pernicious, frequently giving rise to chordee, inflammation of the bladder, swelled testicle, en-

largement of the prostate gland, and stricture of the urethra, and entailing on the imprudent sufferer, a disgusting and painful disease for life. The only local application to be employed in the commencement of the complaint, is warm water, which may be resorted to as the convenience of the patient will admit. No regard should be paid to the discharge. The bowels should be kept freely open, by the use of mild laxatives, throughout the course of the disease, and in cases where the patient is robust and plethoric, one or two bleedings will be attended with great benefit. From the very first appearance of gonorrhœal symptoms, the stomach should be kept constantly nauseated with minute portions of tartar-emetic. The patient ought to carry a weak solution in his pocket, so that he can take it regularly, at home or abroad. Great abstinence as to food, and stimuli of every kind, should be observed. He should keep as quiet as possible, and make free use of diluent drinks, such as teas of sassafras, flaxseed, slippery-elm, watermelon-seed, and parsley-root. By these means the severity of the inflammation will in general be quickly subdued, and the first stage shortened. After this, astringent injections may be resorted to, at the same time that recourse is had to the internal use of balsam copaiva or cubebs.

It is nearly three quarters of a century since the disease was first treated by injections; and in that time almost every medicinal article, mild or stimulating, relaxing or astringent, alone or in combination, has been employed. After all, however, no preparation is better, or more commonly used, than the following:—

Take	White vitriol, ten grains.
	Sugar of lead, twelve grains.
	Laudanum, one drachm.
	Gum Arabic, two drachms.
	Water, eight ounces.

Mix—for an injection.

In employing this, or any other injection, the urethra should be held about the middle, so firmly as to prevent the fluid from passing further down; and it should be used in so gradual a manner as to produce only a slight sensation in the urethra. More than this increases the inflammation; and aggravates the disease, if it does not give rise to the distressing consequences already alluded to. This, or some other injection, may be used four or five times a-day. A very good injection may be made by dissolving one grain of white vitriol in an ounce of boiled water; and, in some cases, an infusion of green tea will answer every purpose.

With respect to the use of balsam copaiva, Dr. Chapman makes the following remarks:—"Ever since I entered on the exercise of my profession, I have trusted to the copaiva, almost exclusively, in the management of this disease, and my confidence in its power has increased, and is fully confirmed. This is no new practice. The medicine was long ago employed in gonorrhœa—in the final stages, however, when the inflammatory symptoms had subsided, and the doses were small and inefficient. Experience has taught me to pursue a different course. Commencing with it on the very first accession of the disease, I am regardless of all the appearances of inflammation, such as ardor urinæ, chordee, &c. No remedy, indeed, is better calculated to remedy these very symptoms, than the copaiva itself. In the treatment of gonorrhœa, one caution, at least, should always be enjoined on patients who are desirous of a speedy cure. It is an entire abstinence from every heating article of food or drink, and a state of complete repose. Without low living and rest, this and all other plans of managing the disease, are counteracted, and rendered comparatively of little use.

Two circumstances frequently interfere with the exhibition of the copaiva, and detract from its utility. It sometimes purges, and, when it does, its efficacy is lost, or greatly diminished. We should here combine laudanum with it, which commonly checks this injurious tendency. Where it does not, it must be discontinued until the bowels recover their tone. To the stomach of some persons the copaiva is so exceedingly offensive that it cannot be retained. As it is hardly possible to disguise the taste of the article, it is sometimes very difficult to overcome this prejudice. In my various endeavors to effect this purpose, I have succeeded best by one of the annexed prescriptions. It may, however, be taken dropped on milk or sweetened water, or wine.

Take	Balsam copaiva, half an ounce.	
	Sweet spirits of nitre, half an ounce.	
	Compound spirits of lavender,	}
	Tincture of opium,	
	Powdered gum Arabic,	
	Water, three ounces.	
		each one drachm.

Mix.—Dose, a table-spoonful three times a-day. Or,

Take	Balsam copaiva, half an ounce.
	Sweet spirits of nitre, half an ounce.
	The white of one egg.
	White sugar, one drachm.

Mix—and then add,
Tincture of opium, one drachm.
Water, three drachms.

Mix—and give a table-spoonful three times a-day.

Contrasted with the ordinary mode of treating it by injections, the plan which I propose has several advantages. It is more convenient to the patient. It produces no swelled testicle. It occasions no strictures. It leaves no gleet. It is more prompt and certain in the cure."

The treatment of gonorrhœa in women is nearly the same as that of the disease in men; but it is more simple. When the vagina is involved in the disorder, injections are to be employed of double the strength of those proper for men. When the glands of the vagina suppurate and form abscesses, they should be opened, and dressed as other abscesses of the same parts.]

CHORDEE.

[THIS is the result of violent inflammation of the urethra, and is very frequently brought on by the early use of injections in clap. The inflammation extends to the frænum or bridle of the foreskin, which is thereby contracted, and pulls the end of the penis downward, causing the most acute pain when that organ is erect, which, from the great irritation of the parts, is frequently the case, especially when the patient is warm in bed. The best external remedies in chordee, are frequent ablutions of warm water, and mechanical pressure by means of a bandage. A narrow bandage, about three quarters of an inch wide, should be applied to the penis when it is not in a state of erection, from the glans up to the body. The pressure must be equal over every part. This will effectually prevent erection, and aid no little in checking the inflammation. "A very useful remedy is to be found in pills composed of equal parts of camphor and hyosciamus, of which two may be taken every second, third, or fourth hour, till the patient be relieved." Anodyne injections are also useful in such cases.

A sudden suppression of the gonorrhœal discharge, frequently causes the inflammation to fall on the prostate gland, (under the neck of the bladder) which swells so as to mechanically prevent the discharge of urine. The obstruction cannot be broken down by the catheter. The system must be relaxed by emetics, cathartics, the warm bath, and bleeding. When the parts are relaxed, so as to admit of the introduction of a catheter, a flexible one with an iron stillet, should be passed until it reaches the obstruction, and then, by retracting the stillet gently, the catheter will elevate its extremity and take the proper direction into the bladder. When the urine has been long retained in the bladder, the patient

should be made to stand up, a large orifice should be opened in a vein of each arm, and the blood allowed to flow until he faints.] (See *Stricture*.)

GLEET.

[THIS disease follows badly cured clap, and consists in a glairy discharge from the urethra, of various colors, but generally greenish, if of long standing. It may also be occasioned by violent exercise, or lifting heavy weights. When it proceeds from the last named causes it is not infectious.

This disease is generally attributed to chronic inflammatory action, and is considered very difficult to cure. "The least error in diet, the use of spirits, wines, acids, fruits, and peppers, is followed by frequent desire to make water, some pain and difficulty in emptying the bladder, and increased discharge of matter. This state increases year after year, till at last a permanent stricture is formed. Loss of health is often the consequence of disturbed nights, produced by pains in the lower extremities, and by the patient being obliged to rise many times out of bed to empty the bladder, perhaps to void only an ounce of urine."

A great variety of remedies are recommended by authors for the cure of gleet; but the "black wash," (made by pouring lime-water on calomel,) used as an injection, is almost the only remedy employed at present. Some, however, use corrosive sublimate in solution; others, balsam copaiva, sugar of lead, nitre, &c. These remedies are always unpleasant, and very frequently inefficient, and are to be avoided if possible, as the disease can be as frequently cured without their assistance as with it. In fact, most of the cases that can be cured at all, can be cured without one particle of medicine. The patient should live on bran-bread, skimmed milk, weak coffee, teas, soups, and mucilaginous drinks; and if the stomach and liver are deranged, recourse should be had to emetics and cathartics until they are set right. By a rigid adherence to this course, a cure can be effected in almost any case in the course of two or three months.

In cases which resist this course, resort may be had to other remedies, as balsam, tincture of cantharides, spirits of turpentine, uva ursi, the cold bath, blisters to the sacrum, injections of alum-water, &c. From twenty to sixty drops of balsam copaiva may be taken two or three times a-day. The tincture cantharides may be used thrice a-day, commencing with doses of fifteen drops, and

gradually increasing them until slight symptoms of strangury are felt, when it should be discontinued.

Uva ursi may be advantageously employed in the dose of from twenty to thirty grains of the powdered leaf, three or four times a-day; or, a strong decoction may be made by boiling an ounce of the leaves in a quart of water down to three half pints, of which a small wine-glassful should be taken every two or three hours.

One of the best injections that can be used, is a saturated solution of common salt, which should be thrown up the urethra three or four times daily. The alum injection may be made by dissolving half a drachm of alum in half a pint of water.]

SWELLED TESTICLE.

[An enlargement of the testicle, resulting from badly cured clap, is termed *Hernia Humoralis*. It is either chronic or acute. The latter grade proceeds from an early attempt to check the gonorrhœal discharge by the use of astringent injections. A short time after the stoppage, the patient is attacked with very acute pain in the testicle, causing great agony and distress, and it goes on to increase progressively.

It is to be treated with active remedies—as blood-letting until the patient faints; tartar emetic, to puke and nauseate; active purging; the warm bath; and the application of hot steam to the affected parts. If you succeed in arresting the inflammation by these means, there will generally be a recurrence of the gonorrhœal discharge.

Hernia humoralis of a chronic form, proceeds from persevering attempts to arrest the discharge of gonorrhœa at a later period of the disease. The pain is of a different character from that experienced in the acute form—being of a dull, obtuse kind, and constant. It, also, is to be cured by bleeding, vomiting, purging, and strict confinement to low diet—all to be continued longer than in the acute form of the complaint—using, at the same time, the warm bath, and suspending the testicle in a bandage made in the form of a cup, and fastened to another bandage passing round the body.

In all cases of this character, immediate application should be made to a physician, as it is impossible to give directions suitable to every case.]

PHYMOSIS, AND PARAPHYMOSIS.

["In consequence of inflammation, it sometimes happens that the prepuce or foreskin becomes so swelled and contracted at the end, that it cannot be drawn back, forming what is called by professional men a *phymosis*; or, that being drawn backward behind the glans of the penis, it cannot be again brought forward, which goes by the name of *paraphymosis*." Although these diseases may arise from other causes, yet they are occasional attendants on gonorrhœa. "In all such cases, it will be necessary, if the inflammation runs high, to draw blood from the arm, proportioning the quantity taken away to the urgency of the case as well as the habit of body; then to open the bowels freely by purgatives, and apply emollient fomentations and poultices to the parts, the patient being kept at the same time in a horizontal position, if convenient; but, if not, he should support the penis by a proper bandage up to the belly. Besides fomenting the parts affected, it will be proper to inject a little tepid milk and water, twice a-day, in all cases of phymosis, between the prepuce and the nut of the penis, for the purpose of washing off any matter which may have lodged there, and which, by neglect, might occasion excoriation or ulceration.

Where there is danger of a mortification of the parts, in consequence of the inflamed and strictured state of the prepuce, there will then be no other way of affording relief than by calling in the aid of a surgeon to divide the constricted part: if necessary, circumcision must be performed, so as to free the glans penis wholly from confinement."

In most cases, however, both these diseases may be relieved by mechanical pressure, which may be made by taking the penis between your hands, and gradually pressing it, increasing the force, until you press it with the whole strength of your hand. By this means, the swelling may be entirely subdued in most cases in ten or fifteen minutes. If you cannot succeed with the hand, apply a bandage as directed in *Chordee*, and renew it three or four times a-day, taking care to bathe the parts frequently in warm water.]

STRICTURE.

[THIS alarming disease is frequently the result of badly cured gonorrhœa. It consists in a narrowing of the urethra at one or more points, greatly impeding the discharge of urine; and, if not

duly attended to, the canal is apt to become closed, giving rise to a total suppression. "A regular and long continued use of a bougie, consisting either of linen cloth dipped in wax and oil, and made of a proper form and smooth surface, or of elastic gum, is the means generally resorted to in common cases of this nature; but in strictures which are nearly impervious, or so contracted as to be incapable of dilatation, the aid of an expert surgeon will be required to destroy the stricture, by passing a few times a bougie armed with caustic. This is, however, a remedy only to be resorted to when the other bougies have failed to produce a sufficient and permanent dilatation of the contracted part.

In using the common bougies, the following rules should be properly attended to. The patient should always begin with one of a moderate size, and previous to his introducing it into the urethra, he should soften it a little, either by grasping it with his hands for a due length of time, or by holding it near a fire, then giving it a gentle bend towards the extremity and oiling it, that it may pass with the greater facility, if the stricture is seated far up the urethra, he may proceed to introduce it. He should employ no force in its introduction, and when he meets with resistance, he must be content with suffering the point of the bougie to press moderately against the stricture for a short time each day, so as gradually to dilate the contracted part. At first he should retain it in the passage for only about half an hour each time, gradually increasing its duration as the parts bear it without much inconvenience or irritation. He is to guard against its slipping into the bladder, by passing a bit of small twine round the upper end of it, and tying the ends of it to the penis. He is to avoid all exercise during the time it is introduced, and he should continue using it for some length of time after the stricture has been overcome."]

TETANUS, OR LOCKED-JAW.

[THIS disease has received various appellations, according to the particular set of muscles affected; but as a knowledge of these distinctions would answer no practical purpose, no notice will be taken of them. Strict regard, however, must be paid to the cause of the disease, when it can be ascertained.

Tetanus generally arises from wounds, and frequently from very trivial ones; as punctures of the slightest kind, made by running a splinter under the nail, or into the toe or finger; a stroke with a whip; stumping the toe; treading on a nail; and, in warm climates, from wounds of almost every description. It is occasionally a symptom in other diseases.

Symptoms.—The disease comes on with a stiffness in the back part of the neck, rendering the motion of the head painful and difficult; some difficulty in swallowing; a pain in the chest, shooting from thence to the back: spasms of the muscles of the neck, and rigidity of the lower jaw, which continuing to increase, the teeth become at length so firmly set together as not to admit of the smallest opening. If it proceeds further, a great number of muscles become affected, as those of the spine, bending the trunk of the body forcibly backwards, or else forwards.

Treatment.—In all cases, the treatment must be conducted on general principles. Where it arises from other diseases, it must consist principally in the use of such remedies, as are applicable to the treatment of the primary affection. A free employment of the tincture of cantharides, however, is recommended in all cases, without regard to the cause.

Dr. Rush says, that, “tetanus, from all its causes, has nearly the same *premonitory* symptoms. These are a stiffness in the neck, a disposition to bend forward, in order to relieve a pain in the back, costiveness, a pain about the external region of the stomach, and a disposition to sleep. In this feeble state of the disease, an emetic, a strong dose of laudanum; the warm bath, or a few doses of bark, have often prevented its being completely formed. When it has arisen from a wound, dilating it, if small or healed, and afterwards inflaming it, by applying to it turpentine, common salt, corrosive sublimate, or Spanish flies, have, in many hundred instances, been attended with the same salutary effects.”

Dr. Jameson says, “Should a patient be affected with this disease, and no physician at hand, there should be a careful examination of the body, and if any sores are found, or if it is known that within a few days, or even several weeks before, the person tramped on a sharp body, &c., the part should be irritated by applying hot spirits of turpentine, or the strongest hot ley, or salt and water hot. And if the disease has not advanced far, or in other words, if it is but a few hours since the symptoms first appeared, a strong vomit should be given; for this purpose thirty grains of white vitriol may be given, and repeated every ten minutes

until it operates freely. For children the dose must be regulated according to the table for dosing medicine." Injections containing large quantities of laudanum, and a little spirits of turpentine, should be given. Two tea-spoonfuls of turpentine, or from five to ten drops of the oil of amber, may be added to the laudanum. The injections should be repeated every three or four hours. "If the jaws are closed, an attempt must be made to open them with a spoon-handle, a smooth stick, or a piece of ivory. Sometimes one or more teeth being out, gives us an opportunity, without any further trouble, to give large quantities of wine which should be commenced immediately; and at the same time opium, in doses of two, three, or even six grains, should be given, and repeated every three or four hours: oil of amber, in doses of from five to ten drops, should be given every two or three hours in wine; and in desperate cases, brandy should be given largely. The warm bath should be used, twice or more, every day, and continued as long as it can be borne at each time.

I should place my principal dependance in all cases of tetanus, on a very constant use of the warm bath, and the free use of the tincture of cantharides, as a tea-spoonful every few hours; and the free use of wine, never forgetting, however, to apply some powerful stimulant to the wound, if it should arise from that cause. Benefit is sometimes derived from dilating the wound with a knife; but, unless the part is very superficially situated, it must not be attempted but by a surgeon. Where it arises from amputation, the most powerful stimulants must be applied to the stump, and the case treated on general principles. If it proceeds from low fevers, or if the case becomes protracted, large quantities of bark should be given."

Dr. Rush says, that a quack in New England cured this disease by giving ardent spirits in such quantities as to produce intoxication. Upon being asked his reason for this strange practice, he said he had always observed the jaw to fall in drunken men, and any thing that produced that effect, he supposed to be proper in locked jaw. Dr. Cooke relates a case cured in the same way. The man got drunk every day. He also speaks highly of Jennings's vapor bath, in such cases; and recommends active bleeding and purging in the beginning of the disease.

The cold bath is much extolled by some physicians, as a remedy in tetanus; but, in most cases, it is considered a dangerous remedy, especially in the heat of summer or in warm climates. "The signals for continuing the use of the cold bath are, its being followed

by a slight degree of fever, and a general warmth of the skin. Where these do not occur, there is reason to believe it will do no service, or perhaps harm."

Blisters have been highly commended, particularly by Dr. Girdlestone. He says he never saw the disease prove fatal, even where they only produced a redness on the skin. They should be applied the whole length of the spine. The application of caustic potash to the spine, from the neck to the sacrum, has also succeeded in the hands of Dr. Reese. It should be applied to such an extent as to destroy the skin for an inch in breadth for the whole distance.

The bowels should be kept open in all cases. Efficient doses of calomel and jalap, or of calomel followed by oil of turpentine, should be regularly given for this purpose.]

WHITE SWELLING.

[THIS disease generally attacks the lower end of the thigh bone, where it makes a part of the knee-joint; though the spongy portions of other bones are sometimes affected by it. Some forms of the disease are painful; others are not. It is distinguished by a gradual increase of the joint, either with or without pain; the skin presenting a white, smooth, shining surface; attended with the formation of matter, which may be rapid or slow in progress. The external signs of inflammation are absent. Sometimes there is a softened state of the bone, so soft, indeed, that a probe can be passed through it—in other cases, there is a scaling of the external layer of the bone, small spiculæ frequently falling away.

White swellings are generally of a scrofulous nature; but they occasionally originate from rheumatism, or from strains that have been neglected, or improperly treated.

Treatment.—"As soon as an affection of this kind is discovered, the patient should remain in bed, and the limb be kept perfectly at rest, without which remedies cannot produce any good effect. The great object is to prevent the formation of matter, by the immediate application of leeches, or scarifications, to the part affected, and by which eight or ten ounces of blood may be taken away every day, or every other day, according to circumstances. The whole joint should then be kept continually wet and cold with a solution of crude sal ammoniac, by means of four or five folds of linen. After the local affection is somewhat abated, frictions with the volatile

liniment, or a mixture of soft soap and spirits of camphor, to which may be added some tincture of cantharides, will have a good effect. With one or other of these liniments, the joint is to be rubbed well twice a-day, and afterwards covered with a piece of flannel that has been soaked in the same. If this should not produce good effects, the part must be rubbed night and morning with mercurial ointment, in the quantity of two drachms at a time, and continued until the mouth becomes gently affected. The cure then may be completed by small blisters on each side of the joint, which should be kept running as long as possible." In many cases, setons will answer a better purpose than blisters. The French surgeons are in the habit of treating the disease by the actual cautery, with great success. For this purpose, a small rod of iron is to be heated to a white heat, and drawn quickly over the skin in four or five places, from one side of the swelling to the other. The cauterized surface is then to be dressed with simple ointment.

If, notwithstanding the use of these means, the swelling progresses, and matter is formed, the abscess should be opened down to the bone, and if the bone be diseased its removal is necessary. After the abscess is opened, and the dead bone, if any, removed, the cavity should be filled with peas, changing them as often as necessary, that is, as often as they become swollen to about double their natural size. This plan must be kept up until the secretions from the part become healthy. The peas are to be kept in their place by pledgets of linen and a common bandage. When the matter from the abscess become of a straw color, unmixed with blood or whitish colored fluid, it may be healed like any other abscess. (See *Abscess*.)

In cases of white swelling, which evidently arise from scrofula, in addition to the local treatment, recourse must be had to the constitutional remedies mentioned under the head of *Scrofula*.]

PROLAPSUS ANI.

[THIS is a protrusion of the inner coat of the lower bowel. It occurs only in persons of very weak, relaxed habits, in consequence of straining at stool. It is common among children during the hot months of summer; and, although not a very dangerous occurrence, is calculated to excite a great deal of alarm in persons not acquainted with it.

As soon as it is ascertained that the bowel is down, measures should be taken to return it. To effect this, the patient should be laid on his face in bed, with his hips elevated by pillows, or across a barrel, and after oiling the parts well, support the tumor in one hand, and apply gently increased pressure with the other, covered by some folds of soft linen moistened with a little sweet oil, until the protruded bowel is sufficiently reduced in size to allow of its being entirely restored to its natural situation by the introduction of a finger along with it. When the finger is introduced, following the bowel, it should not be carried straight forward, but rather upwards and forwards, in the direction of the curvature of the sacrum. As soon as the bowel is returned, a T bandage should be applied, to retain it in its place. The bandage is made by passing a strip of linen or cotton, four or five inches wide, around the body, just above the hips, having a strip attached to its centre behind, at right angles, sufficiently long to be brought between the thighs and attached to the bandage around the body in front. A small pad, filled with wool or cotton, may be attached to the strip which passes between the thighs, so as to make more efficient pressure at the point needing support.

When the bowel has been a long time protruded, and becomes inflamed in consequence of stricture, or exposure to the atmosphere, recourse should be had to general bleeding, and warm fomentations to the parts, before the reduction be attempted. Washing the parts in alum-water, or a decoction of oak bark, will frequently aid in restoring tone to the bowel. The diet of persons subject to it should be as light as possible, and of a laxative character. Mush and molasses are to be preferred. If the relaxation of the bowel is a consequence of disease of the general system, it will disappear as the constitutional affection becomes eradicated.]

WHITLOW.—FELON.

[THERE are three kinds of whitlow—1st. That seated around the nail, which is termed mild:—2d. That seated under the skin and fascia of the inside of the finger:—and 3d. That which is situated under the membrane covering the bone; and which is almost always confined to the first joint of the finger. The last is the

most painful and dangerous; often, when not attended to in time, causing the destruction and loss of the bone.

As soon as unnatural heat, pain, or throbbing is felt in the finger, a piece of tape, or narrow bandage, should be firmly and evenly wound around it, commencing at the point and carrying up to the hand. This will cause an increase of pain for a short time after it is applied, but it will soon subside, and a perfect cure will be effected in two or three days. Scalding the finger in very strong ley, or brandy, or vinegar, has often succeeded in preventing suppuration. The application of a plaster composed of lime and soft soap, is considered a sovereign remedy in some parts of the country.

If the whitlow cannot be discussed in its incipient stages by the bandage, in the first and second varieties a poultice may be applied to hasten the process of suppuration, and the matter should be evacuated with a lancet as soon as possible after it is formed, to prevent the pus from dissecting its way under the fascia, which it is very prone to do, and involving the palm of the hand in the disease. After the matter is discharged, a bandage should be applied as before directed.

In the third variety of whitlow, commonly called "*bone felon*," the most sensitive point should be ascertained by pressing on the ball of the finger, and as soon as found it should be opened down to the bone with a lancet. Place the lancet perpendicularly over the painful part and gradually work it down to the bone, when a small portion of matter will be evacuated, and the intense pain be immediately relieved. If, however, the disease proceeds so far as to destroy the bone, it must be removed by a surgeon.]

RING WORM.—TETTER.

Ringworm is too well known to need description. It can generally be cured by a saturated tincture of Spanish flies, applied by means of a soft sponge, until a blister be raised over the whole extent of the disease. If the first vesication does not cure, the remedy should be repeated. The tincture of puccoon or blood-root is also recommended as an efficacious remedy. The seat of the disease should be well washed with vinegar before it is applied. Creosote ointment (See *Dispensatory*,) has also been used

with success, in the treatment of ringworm, as well as many similar affections of the skin.

A saturated tincture of the root of the narrow-leaved or sour dock (*rumex acetosa*) in vinegar, is among the best remedies in confirmed tetter. Its use should be premised by the free application of strong soap-suds to the part. It gives exquisite pain at first, but must be persevered in. An oil procured from "corn-cobs," by means of dry distillation, has succeeded in curing tetter after many of the common remedies had failed. It should be rubbed over the affected parts two or three times a day. The oil may be procured by filling a large iron kettle with corn-cobs, the large ends upwards, and then turning it bottom upwards on a flat rock, or iron plate, after which the junction of the rock and kettle must be well luted with clay, with the exception of an orifice an inch in length to permit the escape of the oil, at the most dependent side of the rock, which must be slightly raised on one side; then build a brisk fire on the top and around the kettle, and keep it up until the oil ceases to run out. Among the most certain and speedy remedies for tetter, may be reckoned the Creosote. A strong alcoholic solution should be applied two or three times a day.

SCALD HEAD.—TINEA CAPITIS.

Scald head is generally confined to children; and is most apt to affect those of the poor. In many instances it may be ascribed to a want of due cleanliness, a proper supply of wholesome nutritive food, and bad nursing. These, at any rate, will aggravate the complaint. In many cases it is produced by infectious matter conveyed from a child laboring under it to another, by employing the same comb or towel, by putting on its hat or cap, or by sleeping in the same bed.

When the disease is accompanied by a scrofulous disposition, or has been of long standing, it very frequently proves obstinate and difficult to cure.

Treatment.—The first step to be adopted for subduing the complaint, is to cut the hair very short in the places affected, to keep every part of the head very clean, by well washing it with soap and water, and then combing it and brushing away the scabs. Should these means not be found sufficient, the head must be sha-

ved once a week, be well washed daily with warm water and soap, and then be dressed with either of the following ointments, smeared over the scalp, or spread upon a soft linen rag, covering the whole with an oiled silk cap or bladder. Take tar ointment, six ounces, ointment of the nitrate of mercury, two ounces—mix them well: or take liquid tar, five ounces; mutton suet, three ounces; and sublimed sulphur, one ounce and a half. Melt them over a gentle fire.

At the same time that these steps are adopted, the child must be confined to a regular cooling diet, and its body kept gently open. Its general health ought likewise to be attended to, and particularly the digestive organs. If the stomach be disordered, a gentle emetic of the powder of ipecacuanha may be given, the bowels be cleared, and then an ounce of an infusion of cascarilla, with four or five grains of the carbonate of soda, be taken twice a day.” (Thomas.)

Dr. Chapman says, that washing the affected parts with the following lotion, twice a day, will seldom fail to remove the complaint.

Take	Liver of sulphur, three drachms.
	Spanish soap, one drachm.
	Lime-water, eight ounces.
	Alcohol, two drachms.

Mix, for a wash.

If a perfect cure cannot be effected by the use of the above means, the head may be washed with a strong infusion of tobacco leaves in warm water, and then be dressed with the following ointment.

Take	Common lard, two ounces,
	White precipitate, one scruple.

Mix them well, for an ointment.

Should the disappearance of the eruption on the scalp, be followed by glandular enlargements about the neck, blisters may be applied behind the ears or between the shoulders; or an issue may be made near the part, and kept open until the swelling subsides.

Washing the affected parts in scald head with a solution of creosote, has been attended in many cases with the most gratifying success.]

WARTS AND CORNS.

“As WARTS are adventitious substances, and not any part of the original structure of the body, their powers of life are weak.

Hence, when stimulated they generally become smaller, and at length altogether disappear or drop off. On this principle warts may frequently be cured by the application of the muriated tincture of iron, the sulphate of copper, or a powder composed of the powders of savin leaves and the subacetate of copper, in equal proportions. However, the employment of stronger escharotics, like the nitrate of silver or the concentrated acetic acid; the removal of such excrescences with a knife, or pair of scissors; or tying their necks with a ligature; are plans frequently preferred, because the cure is sooner accomplished. The last two methods are eligible when the wart has a narrow neck; but after the removal of the excrescence, it is still proper to touch the root with the caustic or acetic acid; for unless the whole be completely destroyed, the wart will inevitably grow again."

"CORNS are entirely owing to repeated and long continued pressure. Hence they are most frequent in such situations as are most exposed to pressure, and where the skin is near bones, as the toes, soles of the feet, &c,

If a person merely seeks temporary relief, it may be obtained by pulling off his tight shoes, sitting down, placing his feet in a horizontal posture, and becoming a little cool: the prominent portion of the corn should be cut off, as far as it can be done without exciting pain or bleeding, and the feet should be bathed in warm water.

The radical cure essentially requires the avoidance of all the causes giving rise to corns, as tight shoes, warm stockings, exercise, long standing, drinking, &c. Wide, soft shoes should be worn. Such means are not only requisite for a radical cure, but they alone will very often effect it. How many women become spontaneously free from corns in child-bed and other confinements! Though a radical cure is so easy, few obtain it, because their perseverance ceases as soon as they experience the wished-for relief.

When business or other circumstances prevent the patient from adopting this plan, and oblige him to walk or stand a good deal, still it is possible to remove all pressure from the corn. For this purpose, from eight to ten pieces of linen, smeared with an emollient ointment, and having a hole cut in the middle, exactly adapted to the size of the corn, are to be laid over each other, and so applied to the foot, that the corn is to lie in the opening in such a manner that it cannot be touched by the shoe or stocking. When the plaster has been applied some weeks, the corn com-

monly disappears without any other means. Should the corn be in the sole of the foot, it is only necessary to put in the shoe a felt-sole, wherein a hole has been cut, corresponding to the size, situation, and figure of the induration.

A corn may also be certainly, permanently, and speedily eradicated by the following method, especially when the plaster and felt-sole with a hole in it are employed at the same time. The corn is to be rubbed twice a-day with an emollient ointment, such as that of marsh mallows, or with the volatile liniment, which is still better; and in the interim is to be covered with a softening plaster. Every morning and evening the foot is to be put for half an hour in warm water, and while there the corn is to be well rubbed with soap. Afterward all the soft, white, pulpy outside of the corn is to be scraped off with a blunt knife; but the scraping is to be left off the moment the patient begins to complain of pain from it. The same treatment is to be persisted in without interruption until the corn is totally extirpated, which is generally effected in eight or twelve days. If left off sooner the corn grows again.

A multitude of other remedies for curing corns are recommended. They all possess, more or less, an emollient and discutient property. The principal are green wax, soap, mercurial and hemlock plasters, a piece of green oil-skin, &c. They are to be applied to the corn, and renewed as often as necessary. A very successful composition consists of two ounces of gum ammoniacum, the same quantity of yellow wax, and six drachms of verdigris. In a fortnight, if the corn yet remain, a fresh plaster is to be applied." (Cooper.)

A person entirely cured of corns is sure to be affected with them again, unless all the causes giving rise to them be carefully avoided.

PIMPLES ON THE FACE.

THIS very troublesome affection needs no description. Its principal seats are the chin in men, and the head in both sexes, particularly the margin of the hairy scalp, around the forehead and temples, and near the external ear. The treatment may be divided into constitutional and local. The constitutional treatment

consists in attention to the bowels and diet, and taking all the ordinary means to improve the powers of digestion, including the warm bath. Persons much troubled with these pimples should avoid too much singing, stooping, and exposure to the heat of a fire or stove; all spirituous drinks, as well as fermented liquors, are to be avoided. They should live on a diet consisting of a good deal of milk and vegetables, and drink nothing but cool water, milk and water, buttermilk, or vinegar and water. The bowels should be kept open by the daily use of flour of sulphur or cream of tartar.

The local treatment, (says Mackintosh,) consists in avoiding stimulating applications during the inflammatory stage, and puncturing the part, to prevent suppuration, and allow a free passage to the sebaceous matter. This has the effect, also, of preventing any permanent hardness, which so frequently happens when the process of suppuration is very slow, or when it does not take place at all. If matter have formed, the lancet should be used to allow its escape, and gentle pressure applied at the same time to force out the hard sebaceous matter. I know many females who bear marks of the disease, before the plan of early puncturing the pimples was adopted. In severe cases, not only is the point of the lancet necessary, but the forceps also, to extract any hair which may appear to be a source of irritation; and it is particularly necessary on the chin, where on many occasions the root of the hair itself will be found in a diseased, thickened state.

Professor Cooke recommends the application of a saturated solution of arsenic for the cure of small ulcers of the face. He has used it for many years without a failure. The ulcer should be washed with the solution and then covered with adhesive plaster or Turner's cerate. The washing must be renewed, and the cerate re-applied, every time it comes off. The surface comes off as a first effect of the remedy, after which it heals.

ERUPTIONS.

THERE are a great many irregular eruptions, most of them without a name, for the cure of which resort is generally had to local remedies. As a general rule, they may be successfully treated by purgatives in children—and by the administration of

sulphur in adults. If these means are not sufficient of themselves to sweep away the disease, the external application of a weak solution of creosote may be employed in connection with them.

ISSUES, OR DRAINS.

AN issue is an ulcer designedly made, and kept open a certain time, or even the patient's whole life, for the cure or prevention of diseases. There are several methods of making an issue: one is with a lancet or scalpel; another with caustic. The place for the issue being fixed upon, a fold of the skin is to be pinched up between the finger and thumb, and an incision made into it of sufficient size to hold a pea, or as many peas as may be thought proper. The pea or peas are then to be placed in the cut, and covered with a piece of sticking plaster, a compress and a bandage. The peas first inserted need not remain longer than three or four days, when suppuration will have begun; but the issue is afterward to be cleaned and dressed every day, and have fresh peas put into it. This is the ordinary method of making an issue intended to contain only one or two peas. When the issue is to be larger, the best plan is to destroy a portion of the integument with lunar caustic, or caustic potash blended with quicklime, commonly known by the name of lapis infernalis. The last is preferred. The situation and size of the issue having been determined, a piece of adhesive plaster, having a hole cut in it, of the exact shape and size of the issue intended to be made, is to be applied to the part. The caustic is to be taken hold of with a bit of lint or tow, and its end having been moistened with water, is to be steadily rubbed upon the part of the skin where the issue is to be formed. The frictions are to be continued, till the whole surface, intended to be destroyed, assumes a darkish corroded appearance. The caustic matter may now be carefully washed off with some wet tow. The plaster is to be removed, and a linseed poultice applied. As soon as the eschar is detached, or any part of it is loose enough to be cut away, without pain or bleeding, the peas are to be inserted and confined in their proper place with a piece of adhesive plaster. Some use beans for this purpose; others beads, which answer very well, and have the advantage of serving for any length of time, when washed and cleaned every day. If the issue be of a longitudinal shape, the peas, beans, or beads, may

be more easily kept in their places when a thread is passed through them.

• Issues ought always to be made, if possible, in a situation where the peas will not be much disturbed by the ordinary motions of the body, nor interfere with the action of muscles. Thus, issues in the arm are usually made about one-third of the distance from the point of the shoulder to the elbow. In the lower extremities, issues are often made at the inner side of the thigh, immediately above the knee, in a cavity that may be readily felt there with the fingers. Sometimes they are made on the inside of the leg, just below the knee. For the relief of certain affections of the head or eye, the nape of the neck is commonly selected as a good situation. In caries of the spine, they are made on each side of the spinous processes of the vertebræ. In cases of diseased hips, they are formed in a depression just behind the upper part of the thigh bone. When the nature of the disorder does not particularly indicate the situation for the issue, the arm should be preferred to the leg, as issues upon the upper extremities, particularly the left arm, are much less annoying than upon either of the lower limbs.

The great art of keeping an issue open for a long time, consists in maintaining an equal and effectual pressure upon the peas; by which means they are confined in their places, little depressions are made for them, and the granulations hindered from rising.—Compresses of pasteboard and sheet-lead will often be found highly useful for this purpose. (Cóoper.)

Dr. Reese says, “The inconvenience arising from pea issues, and the difficulty of keeping them open for a length of time, as is often needful, have long since suggested to surgeons a variety of other methods of making issues, less troublesome to the patient and his physician.” He gives the following method the preference over all others. “The issue is made by the simple process of rubbing the skin with a stick of the caustic potash until as much of the surface is destroyed as is necessary. The process is effected in about five minutes, if constantly applied; and its perfection is known by the black and horny aspect of the eschar. Its property may be instantly neutralized if too violent, by washing the part with vinegar, and the effect ceases. A poultice is then applied, and in eight or ten days there is a slough comes off; when it may be dressed with savin ointment, which will keep it open indefinitely.

SETONS.

A **SETON** is a kind of issue, usually made by means of a flat needle, from half an inch to nearly an inch in breadth, armed with a skein of thread or silk, of exactly the same breadth as the needle. Setons are made for the same objects as pea issues.

A fold of skin is to be pinched up at the part where the seton is designed to be made, and the needle is to be pushed through it, together with the skein of thread, which is first dipped in sweet oil. The instrument is not to be introduced too low into the base of the fold, nor too high near its edge. In the first case, the muscles and parts which ought to be avoided might be wounded; in the second, the interspace between the two wounds would be very narrow, and the seton soon make its way through it.

When no seton-needle is at hand, the fold of the skin may be punctured with a lancet, and the skein of thread introduced by means of an eye-probe, or a tape-needle. A seton may be applied to almost any part of the surface of the body, when circumstances require it: but one of its openings should always be made lower than the other, that the matter may readily flow out. The skein of thread is to remain untouched for a few days after the operation, until the suppuration loosens it. Afterward, the part of the thread nearest the wound is to be smeared with oil, white cerate, or any digestive ointment, and drawn under the fleshy interspace between the two wounds, and what was there before is to be cut off. The seton is to be drawn in this manner once or twice a-day, according as the quantity of matter may require. A new skein of silk or thread is to be attached to the preceding one as often as necessary. Care is to be taken to keep the thread on the outside of the wound well covered, and free from the discharge, which would make it stiff and hard, and apt to occasion pain and bleeding on being drawn into the wound. If the discharge should be deficient in quantity, powdered cantharides may be mixed with the digestive ointment.

A neater and less troublesome kind of seton is made by introducing a thin, smooth slip of elastic gum into the wound, instead of silk. (Cooper.)

BLISTERS.

THE following remarks on blisters are extracted from a late publication by Dudley Atkins, M. D. They are well worth the attention of those who are under the necessity of using blisters.

“There are one or two circumstances connected with the application of blisters, from which I have derived much comfort myself, and by which, I believe, I have saved my patients much pain.

In the first place, I believe it is not generally known, that it is not necessary to keep a blister applied until its full effect is produced. If it is kept on until the skin is decidedly irritated, and very minute vesicles begin to appear, the application of a bread poultice instead of the plaster will draw a full blister. This is of great importance in the case of small children, who often suffer excessively from the application of a blister, and whom I have seen to fall into a quiet sleep, after the poultice was applied, and although the process of vesication was still actively going on. The same remark may be made of blisters in persons of very nervous temperament, in fevers, &c. Their distress is often very great under the action of blisters, and the disease is rather increased than lessened by them. In all such cases, the application of a soft poultice gives great comfort, and at the same time time completes the vesication. The poultice may be conveniently folded in a silk handkerchief.

The other remark I would make is, that a folded silk handkerchief makes an excellent dressing for blisters, totally excluding the air, promoting the discharge, and absorbing all the serum as it flows from the blistered surface.

I lay a silk handkerchief, folded to about six or eight thicknesses of silk, directly on the blistered skin, and have found it by far the simplest, best, and most convenient dressing I have ever used. It may be changed daily, and will be found to give the most perfect ease; so that it can hardly be known by the feeling if there be a blister or not.”

PART IV.

DISEASES OF WOMEN. .

WOMEN, in all civilized nations, have the management of domestic affairs, and it is very proper they should, as nature has made them less fit for the more active and laborious employments. This indulgence, however, is generally carried too far; and females, instead of being benefitted by it, are greatly injured, from the want of exercise and free air. To be satisfied of this, one need only compare the fresh and ruddy looks of a milk-maid, with the pale complexion of those females whose whole time is spent within doors. Though nature has made an evident distinction between the male and the female with regard to bodily strength and vigor, yet she certainly never meant, either that the one should be always without, or the other always within doors.

The confinement of females, besides hurting their figure and complexion, relaxes their solids, weakens their minds, and disorders all the functions of the body. Hence proceed obstructions, indigestion, flatulence, abortions, and the whole train of nervous disorders. These not only unfit women for being mothers and nurses, but often render them whimsical and ridiculous. A sound mind depends so much upon a healthy body, that where the latter is wanting, the former is rarely to be found.

I have always observed, that women who were chiefly employed without doors, in the different branches of husbandry, gardening, and the like, were almost as hardy as their husbands, and that their children were likewise strong and healthy. But as the bad effects of confinement and inactivity upon both sexes have been already shown, we shall proceed to point out those circumstances in the structure and design of females, which subject them to peculiar diseases, the chief of which are, their *monthly evacuations*, *pregnancy*, and *child-bearing*. These, indeed, cannot properly be called diseases; but, from the delicacy of the sex, and their being often improperly managed in such situations, they become the source of numerous calamities.

THE MENSTRUAL DISCHARGE.

ABOUT the first appearance of this discharge, the constitution undergoes a very considerable change, generally indeed for the better, though sometimes for the worse. The greatest care is now necessary, as the future health and happiness of the female depend in a great measure upon her conduct at this period.*

“The age at which menstruation begins, varies in individuals, and also in different climates. It is a general law, that the warmer the climate, the earlier does the discharge take place, and the sooner does it cease. In Asia, for instance, the menses begin about nine years of age; whilst in the North, a woman does not arrive at puberty until she is eighteen or twenty years old : nay, if we may credit authors, in very cold countries, women only menstruate in the summer season.” In temperate climates, the most common age at which the menses appear, is thirteen or fourteen years. “The quantity of the discharge varies, also, according to the climate and constitution of the woman. In this country from six to eight ounces are lost at each menstrual; but this does not flow suddenly; it comes away slowly for the space of three or four days. Some women discharge less than this, and are unwell for a shorter space of time; others, especially those who live luxuriously, and are confined in warm apartments, menstruate more copiously, and continue to do so for a week. In this country, menstruation ceases about the forty-fourth year, lasting for a period of about thirty years.” “The menses are obstructed during pregnancy, and the giving of suck; but if lactation be very long continued, the menses return, and the milk disappears or becomes bad.” (Burns.)

If a girl about this time of life be confined to the house, kept constantly sitting, and neither allowed to romp about, nor employed in any active business, which gives exercise to the whole body, she becomes weak, relaxed, and puny; her blood not being duly prepared, she looks pale and wan; her health, spirits, and vigor

* It is the duty of mothers, and those who are intrusted with the education of girls, to instruct them early in the conduct and management of themselves at this critical period of their lives. False modesty, inattention, and ignorance of what is beneficial or hurtful at this time, are the sources of many diseases and misfortunes in life, which a few sensible lessons from an experienced matron might have prevented. Nor is care less necessary in the subsequent return of this discharge. Taking improper food, violent affections of the mind, or catching cold at this period, is often sufficient to ruin the health, or to render the female ever after incapable of procreation.

decline, and she sinks into a valetudinarian for life. Such is the state of numbers of those unhappy females, who, either from too much indulgence, or their own narrow circumstances, are at this critical period, denied the benefit of exercise and free air.

A lazy, indolent disposition proves likewise very injurious to girls at this period. One seldom meets with complaints from obstructions amongst the more active and industrious part of the sex; whereas the indolent are seldom free from them. There are in a manner destroyed by the *chlorosis*, or green-sickness, and other diseases of this nature. We would, therefore, recommend it to all who wish to escape these calamities, to avoid indolence and inactivity as their greatest enemies, and to be as much abroad in the open air as possible.

Another thing which proves very hurtful to girls about this period of life, is unwholesome food. Fond of all manner of trash, they often indulge in it, till their whole humors are quite vitiated. Hence ensue indigestions, want of appetite, and a numerous train of evils. If the fluids be not duly prepared, it is utterly impossible that the secretions should go properly on. Accordingly we find that such girls as lead an indolent life, and eat great quantities of trash, are not only subject to obstructions of the *menses*, but likewise to glandular obstructions; as the *scrofula*, or king's evil, &c.

A dull disposition is also injurious to girls at this period. It is a rare thing to see a sprightly girl who does not enjoy good health, while the grave, moping, melancholy creature proves the very prey of vapors and hysterics. Youth is the season for mirth and cheerfulness; let it therefore be indulged; it is an absolute duty. To lay in a stock of health in time of youth, is as necessary a piece of prudence, as to make provision against the decays of old age. While, therefore, wise nature prompts the happy youth to join in sprightly amusements, let not the severe dictates of hoary age forbid the useful impulse, nor damp with serious gloom the season destined to mirth and innocent festivity.

Another thing very hurtful to females about this period of life, is strait clothes. They are fond of a fine shape, and foolishly imagine that this can be acquired by lacing themselves tight.

Hence, by squeezing the stomach and bowels, they impair the digestion, and occasion many incurable maladies. This error is not indeed so common as it has been, but, as fashions change, it may come about again; we therefore think it not improper to mention it. I know many females who, to this day, feel the dreadful effects of that wretched custom which prevailed some years

ago, of squeezing every girl into as small a size in the middle as possible. Human invention could not possibly have devised a practice more destructive to health.

After a female has arrived at that period of life when the *menses* usually begin to flow, and they do not appear, but, on the contrary, her health and spirits begin to decline, we would advise, instead of shutting her up in the house, and dosing her with steel, asafoetida, and other nauseous drugs, to place her in a situation where she can enjoy the benefit of free air and agreeable company. There let her eat wholesome food, take sufficient exercise, and amuse herself in the most agreeable manner; and we have little reason to fear, but nature, thus assisted, will do her proper work. Indeed she seldom fails, unless where the fault is on our side.

This discharge in the beginning is seldom so instantaneous as to surprise females unawares. It is generally preceded by symptoms which foretell its approach; as a sense of heat, weight, and dull pain in the loins; distension and hardness of the breasts; headache, loss of appetite, lassitude, paleness of the countenance; and sometimes a slight degree of fever. When these symptoms appear about the age at which the menstrual flux usually begins, every thing should be carefully avoided which may obstruct that necessary and salutary evacuation, and all means used to promote it: as sitting frequently over the *steams* of warm water, drinking warm diluting liquors, &c.

After the *menses* have once begun to flow, the greatest care should be taken to avoid every thing that may tend to obstruct them. Females ought to be exceeding cautious of what they eat or drink at the time they are out of order. Every thing that is cold, or apt to sour on the stomach, ought to be avoided. Fish, and all kinds of food that are hard of digestion, are also to be avoided. As it is impossible to mention every thing that may disagree with individuals at this time, we would recommend it to every female to be very attentive to what disagrees with herself, and carefully to avoid it.

Cold is extremely hurtful at this particular period. More of the sex date their diseases from colds caught whilst they are out of order, than from all other causes. This ought surely to put them upon their guard, and to make them very circumspect in their conduct at such times. A degree of cold that will not in the least hurt them at another time, will at this period be sufficient entirely to ruin their health and constitution.

The greatest attention ought likewise to be paid to the mind,

which should be kept as easy and cheerful as possible. Every part of the animal economy is influenced by the passions, but none more so than this. Anger, fear, grief, and other affections of the mind, often occasion obstructions of the menstrual flux, which prove absolutely incurable.

From whatever cause this flux is obstructed, except in the state of pregnancy, proper means should be used to restore it. For this purpose we would recommend sufficient exercise in a dry, open, and rather cool air; wholesome diet, and, if the body be weak and languid, generous liquors; also cheerful company and all manner of amusements. If these fail, recourse must be had to medicine.

When obstructions proceed from a weak relaxed state of the solids, such medicines as tend to promote digestion, to brace the solids, and assist the body in preparing good blood, ought to be used. For this purpose, I have of late made use of pills composed of prepared steel, powdered myrrh, and the best aloes, equal parts. These must be formed into pills of the common size, and two or three of them given every night at bed time. Filings of iron may be infused in wine or ale, two or three ounces to a quart, and after it has stood for two or three weeks, it may be filtered, and about half a wine glass of it taken twice a-day; or prepared steel may be taken in the dose of half a drachm, mixed with a little honey or treacle, three or four times a-day.

Previous, however, to the use of these medicines, it may be advisable to give a gentle emetic, for the purpose of cleansing the stomach, and freeing it from acidities and inactive fluids.

When obstructions proceed from a viscid state of the blood, or for women of a gross or full habit, evacuations, and such medicines as attenuate the humors, are necessary. The patient in this case ought to be bled, to bathe her feet frequently in warm water, to take now and then a cooling purge, and to live upon a spare thin diet. Her drink should be whey, water, or small beer, and she ought to take sufficient exercise. A teaspoonful of the tincture of black hellebore may also be taken twice a-day in a cup of warm water.

It is proper in our curative plan, to recollect, that suppression of the menses may take place in different circumstances of the constitution. It may occur with a debilitated chlorotic condition, in which case, along with remedies calculated to invigorate the constitution, emenagogue medicines may be employed, such as savin (from five to ten grains of the powdered leaves three or four times a day;) hellebore (a drachm of the tincture twice or thrice

daily;) myrrh; madder, or tincture of cantharides. The last named medicine may be given in the dose of ten drops, morning, noon, and night, gradually increasing the quantity till it amounts to two or three drachms a day. Dr. Chapman speaks very highly of the polygala senega (Seneca snake root.) The mode in which it is prepared and used is as follows. "In making the decoction, a pint of boiling water is added to an ounce of the senega bruised, in a close vessel; and it is suffered to simmer over the fire, till the quantity is reduced one-third; to prevent nausea, it is best to make the addition of an aromatic, as orange peel or cinnamon. Four ounces of this decoction at a medium, is to be given during the day. But at the time when the menstrual effort is expected to be made, and till the discharge is actually induced, the dose is to be pushed as far as the stomach will allow. In the intervals of the menstrual periods, the medicine is directed to be laid aside for a week or two; as without these intermissions it becomes nauseous and disgusting to the patient.

If, however, along with suppression of the menses, there is a febrile state, marked by heat of the skin, frequent pulse, flushing of the face, and irregular pains in the chest or abdomen, stimulating medicines are hurtful. It is, in this state, of the utmost consequence to keep the bowels regularly open. "Constipation is not only to be prevented, but the bowels are to be daily and freely acted upon by aloetic pills, conjoined with assafœtida, in case of pain from flatulent distension of the bowels. The hip bath is a powerful remedy in this class of cases, and is to be used daily; it is preferable to the general hot bath, from the increased heat which partial emersion will enable the patient to sustain. At first the water should be somewhat under 100 degrees, but the temperature should be afterwards increased by the addition of more hot water, till it is as warm as the patient can well bear. It is found beneficial to put an ounce of mustard in the bath. If there be much vascular excitement the lancet may be necessary in full, plethoric individuals; and the blood may be taken from the lower extremity, if a vein can be found conveniently situated. The clothing must, in all cases, be adapted to the constitution of the patient and the season of the year, and cold feet avoided. The diet should be regulated according to circumstances;—if the patient be full and plethoric, it should be light, abstemious, and dry;—if weak, it should be more nourishing, but the stomach must never, on any account, be loaded. If the stools show that the food is passed undigested, or if the tongue be furred, or be red and dry, animal food of any kind must

be given with caution, and I think prohibited altogether when the tongue is in the condition above described." (McIntosh.) The effort to re-establish the menstrual function by the use of the lancet, the hip-bath, and the internal use of medicines intended to act particularly on the uterus, should always be made about the time that it ought to appear in the regular course of nature; and in the mean time the health must be improved by the employment of emetics, cathartics, attention to diet and free exercise.

Dr. Dewees, who has had great experience in female complaints, treats suppressed menstruation in cases which do not yield to simple constitutional remedies, by the use of madder, tincture of cantharides, or tincture of guaiacum. He invariably brings the system into the best possible order by the use of cathartics, emetics, blood-letting, and confinement to spare vegetable diet, before commencing the administration of those remedies.

He says, "The madder may be given more safely than any other remedy with which I am acquainted, without such particular attention being paid to the pulse, as it excites no increase of action in it. I am in the habit of using this drug without previous preparation, when applied to near the period at which the menses should appear; and sometimes succeeded most promptly with it—indeed, this is the only time at which it seems to be successful; for if it fail then, it is rarely more fortunate afterwards.

When the madder fails, I commence, in recent cases, with the tincture of cantharides, after having duly prepared the system for its reception. I rarely increase the quantity more than ten or fifteen drops beyond the original dose, as the moderate doses of thirty-five or forty have always been found sufficient with me, when the medicine would succeed at all. Should the cantharides fail, the volatile tincture of guaiacum is then ordered; which, when exhibited in proper cases, has never yet failed in my hands. As it is much more stimulating than the madder or cantharides, I am more attentive to have the system properly prepared. I therefore generally reduce the pulse lower, than for the medicines just named: this is easily effected by the loss of a little more blood than in the other cases: purging more freely; and insisting on a low diet for a few days.

The mode of using it is, a tea-spoonful every morning, noon, and evening, in a wine-glassful of sweetened milk; or, where not forbidden by some peculiarity of circumstance, as much white wine, as Sherry, Teneriffe, or Madeira. The dose must be gradually increased in those cases where a perseverance beyond four or five

weeks becomes necessary. Should this medicine disturb the bowels too much, a few drops of laudanum must be added to each dose; but if, on the contrary, they should not be sufficiently opened, the addition of a little of the resin of jalap, or of powdered rhubarb, will be an improvement."

The tincture should be made according to the following formula.

Take	Powdered gum guaiacum, four ounces.
	Carbonate of soda or potash, one and a half ounces.
	Powdered allspice, one ounce.
	Alcohol, diluted, one pound.

Mix—and digest for a few days.

The volatile spirit of ammonia may be added as circumstances may require, in the proportion of a drachm, or two, to every four ounces of tincture; or less, or more, agreeably to the state of the system.

When obstructions proceed from affections of the mind, every method should be taken to amuse and divert the patient. And that she may the more readily forget the cause of her affliction, she ought, if possible, to be removed from the place where it happened. A change of place, by presenting the mind with a variety of new objects, has often a very happy influence in relieving it from the deepest distress. A soothing, kind, and affable behavior to females in this situation is also of the last importance.

An obstruction of the *menses* is often the effect of other maladies; when this is the case, instead of giving medicines to force that discharge, which might be dangerous, we ought by all means to endeavor to restore the patient's health and strength. When that is effected, the other will return of course.

IMMODERATE FLOW OF THE MENSES.

THE flow of the menses is to be considered immoderate, when it either returns more frequently than is natural, continues longer than ordinary, or is more abundant than is usual with the same person at other times; usually accompanied with pains in the back and belly, somewhat like those of childbirth.

When this happens, the patient becomes weak, the color pale, the appetite and digestion are bad, to which œdematous swellings of the feet, dropsies, and consumptions often ensue. This frequently happens to women about the age of forty-five or fifty,

and is very difficult to cure. It may proceed from a sedentary life; a full diet, consisting chiefly of salted, high seasoned, or acrid food; the use of spirituous liquors; excessive fatigue; relaxation; a dissolved state of the blood; violent passions of the mind, &c.

The treatment of this disease must be varied according to its cause. When it is occasioned by any error in the patient's regimen, an opposite course to that which induced the disorder must be pursued, and such medicines taken as have a tendency to restrain the flow, and counteract the morbid affections of the system whence it proceeds.

To restrain the flux, the patient should be kept quiet and easy both in body and mind. If it be very violent, she ought to lie in bed with her head low; to live upon a cool and slender diet, as veal or chicken broths with bread; and to drink decoctions of nettle-roots, or the greater comfrey, cooling aperients,* and refrigerants, as small and frequent doses of nitre;† cool acidulated liquors, as lemonade; light covering, and lying on a mattress instead of a bed.

Increased menstrual discharge is much more common among married women than virgins; it is very rare for the latter, especially if healthy, to be affected with hemorrhage from the womb. The disease is to be managed on general principles. If the patient be plethoric, the skin warm, and the pulse above the natural standard, blood-letting may be resorted to; but generally it is better to keep the bowels lax, and give small portions of antimonials or ipecac. till the febrile state be removed; after which the disease may go off, but if not, tonics will then do good. In most cases, however, there is rather an opposite state of the system, requiring a directly invigorating plan, such as the cold bath, preserving the bowels in a regular state, gentle exercise in the country, the use of a nourishing and easily digestible diet, with wine and tonic medicines, or chalybeate water. Sometimes the use of aqua ammonia in large doses is attended with great advantage. Cold water may, with much benefit, be poured daily upon the back, and injected into the vagina or lower bowel. In obstinate cases,

* Take	Epsom Salts,	2 ounces
	Warm Water,	6 ounces.
	Compound Tincture of Senna,	1 ounce.
	Syrup of Roses,	2 drachms.

Mix; and take two table spoonfuls for a dose.

† Take	Infusion of Roses,	11 ounce.
	Nitre,	10 grains.

Occasionally adding, if necessary, Tincture of Opium, 15 drops.

Make a draught, to be repeated every hour.

emetics, such as ipecacuanha or sulphate of zinc, are of great service. It is necessary to avoid whatever may act as an exciting cause, such as heated and crowded rooms, much dancing, long walks, and every thing calculated to invite a flow of blood to the genital organs. (Burns.)

In full plethoric constitutions, when the discharge is great, and if the pulse be full and strong, blood-letting will sometimes check it instantly. If it should fail to give prompt and lasting relief, sugar of lead should be exhibited in the form of pills, each containing from two to five grains, combined with the third of a grain of opium, and the fourth of a grain of ipecacuanha. One pill may be given every half hour or hour, or at longer intervals, as circumstances may require. When the discharge is very profuse, and the system much reduced, opium is indispensable. It may be given in doses of one, two, or three grains, according to the urgency of the case. When the hemorrhage occurs in weak and relaxed habits, or when the discharge is continued so long as to produce debility, the patient's strength must be supported by small quantities of nourishment given at short intervals, together with wine or brandy. In every case the patient must be kept in bed, with the head and shoulders low and the hips raised. She must be kept perfectly quiet; without being overloaded with bed-clothes, but at the same time a comfortable degree of heat is to be preserved, otherwise bad consequences will be produced. (Mackintosh.)

The bowels may be kept open by any common cathartic pills, assisted, if necessary, by castor oil. A strong decoction of hempseed has obtained some reputation as a remedy in such cases. It may be drank freely, but should not be allowed to interfere with the administration of other remedies.

Occasionally the female menstruates every fortnight, but the discharge, which continues for the usual time, is alternately red and pale or colorless. This state seems to depend on debility. Dr. Dewees relates the case of a female who, from her twelfth year, at which time the menstrual discharge commenced, never enjoyed a longer exemption from it than ten days, unless she were pregnant or suckling; yet, during the whole of that time, she had never suffered the slightest indisposition that could be attributed to that cause: she was, therefore, two-thirds of her time, with the exceptions just mentioned, giving issue to the discharge. She evacuated daily as much as women in general. In regard to the treatment

of such cases, the Doctor says, "that, so long as it does not impair the constitution, it should never be meddled with."

FLUOR ALBUS.—LEUCORRHŒA.

THE *uterine* discharge may offend in quality as well as in quantity. What is usually called the *fluor albus*, or whites, is a very common disease, and proves extremely injurious to delicate women. This discharge, however, is not always white, but sometimes pale yellow, green, or of a blackish color: sometimes it is sharp and corrosive, sometimes foul and fœtid. It is attended with a pale complexion, pain in the back, loss of appetite, swelling of the feet and other signs of debility. It generally proceeds from a relaxed state of the body, arising from indolence, the excessive use of tea, coffee, or other weak and watery diet, frequent child-bearing, &c.

To remove this disease, the patient must take as much exercise as she can bear without fatigue. Her food should be nourishing, but of easy digestion. Tea and coffee are to be avoided. I have often known strong broths have good effect; and sometimes a milk diet alone will perform a cure. The patient ought not to lie too long in bed.

Independent of this regimen, the proper indications of cure to be observed appear to be, to increase the action of the absorbents of the uterus and vagina, by restoring the tone of the system; to correct the acrimony of the discharge; diminish its quantity; to alleviate other urgent and distressing symptoms; and to strengthen the system, when the disease is complicated with general debility and relaxation. With this view, the first of these intentions is to be effected by astringents, administered by the mouth; and likewise thrown up into the vagina and uterus in the form of injections.* Alum, sulphate of zinc (white vitriol,) gum kino, and cat-

* Take	Decoction of Oak Bark,	1 pint.
	Alum,	1 drachm.
	Make an injection. Or,	
Take	Sulphate of Zinc,	1 drachm.
	Super Acetate of Lead,	10 grains.
	Distilled Water,	1 pint.
	Make an injection. Or,	

echu, are the astringents most employed as internal remedies; and these may be given either separately or combined with some tonic, as the bark, bitters, chalybeates, and the sulphuric acid as advised below,* with partial cold bathing, or spunging the loins and thighs with cold water.

In addition to astringents, it has been usual to employ in fluor albus such stimulating medicines as most commonly determine to the urinary passages, which, from their vicinity to the uterus, have often been found to afford considerable relief. On this occasion, turpentine and other balsams have been used.† Gentle emetics are also supposed to be of singular benefit in this complaint. When there are excoriations externally or internally, the solution of the acetate of lead, sufficiently diluted with water, may be employed as a wash.

In a majority of cases, this very troublesome disease may be arrested by the continued use of purgatives alone, such being used as procure two or three consistent evacuations daily. Cooke's pills, with the eighth of a grain of ipecac. added to each pill will be found preferable. At the same time, the patient should be confined to a milk and vegetable diet; and if there be much febrile excitement, blood should be let from the arm.

The tincture of cantharides is considered a specific in this complaint by many practitioners. Thirty drops may be taken morning, noon, and night, in a little sugar and water; increasing the dose every third day five drops at a time, until strangury comes on, unless the disease is arrested before this symptom appears. Should the disease withstand the first strangury, commence with

Take	Bruised Oak Gall,	½ ounce,
	Hot Water,	2 pints,
	Make an injection.	Or,
Take	Strong Infusion of Green Tea,	
	Make an injection.	
* Take	Powdered Alum,	2 drachms,
	————— Nutmeg,	½ drachm.
	————— Catechu,	1 drachm.
	————— Peruvian Bark,	½ ounce.

Syrup of Ginger, a sufficiency to form an electuary, of which the bulk of a small walnut may be taken three times a-day.

† Take Balsam of Copaiba, or Canada Turpentine, 2 drachms.
The Yolk of an Egg.

Let them be well mixed together in a marble mortar, and gradually add,

Water,	7 ounces.
Clarified Honey,	½ ounce.
Tincture of Spanish Fly,	1 drachm.

Mix, and take two dessert-spoonfuls thrice a day,

the original dose of thirty drops, and increase it as before until a difficulty in making water is again experienced. If the strangury be severe, flaxseed tea or barley water should be freely used. (See *Strangury*.)

DIFFICULT MENSTRUATION.—DYSMEN- ORRHŒA.

BESIDES the other deviations from the usual course of nature, alluded to under this head, a third sometimes occurs, wherein menstruation, although not entirely suppressed, is nevertheless somewhat difficult, and accompanied with severe pains in the back, loins, and bottom of the belly. This disease is supposed to be owing to a weak action of the vessels of the uterus, or spasm of its extreme vessels; and is to be removed by chalybeates, warm bathing, both topical and general, with the use of opiates, which should be employed as soon as the symptoms that denote its approach are apparent. The extract of stramonium, in half grain doses, will often prove serviceable when other anodynes fail.

Saffron, madder, and rue are often of service in this disease; at the same time, the hip-bath is to be employed for a day or two previous to menstruation, and should be repeated every night during its continuance. Opiates, combined with ipecacuanha, or anodyne clysters, will generally relieve the pain. Ipecacuanha alone, in doses sufficiently large to produce full vomiting, will generally give entire relief. The bowels should be kept open by mild saline laxatives. (Burns.) Dr. Chapman recommends large doses of opium and camphor in such cases; and also speaks highly of blisters applied to the sacrum, which, he says, will remove the pain and bring on a free discharge of the menses. Dr. Dewees relies on camphor alone to relieve the pain at the commencement of, and during, the attack.

Take Gum Camphor, one scruple.
 Alcohol, from five to ten drops.

Rub them together until the camphor is powdered, and then add,
 Powdered gum Arabic, one drachm.
 White sugar, two drachms.
 Cinnamon water, one ounce.

Mix—and give half of this draught the instant pain is experienced; and if it be not relieved in an hour or two, the other half is to be given. This quantity, however, is not always sufficient to

subdue pain; in this case let the mixture be repeated—or the same quantity of camphor may be finely powdered, and given in ten grain doses every hour, in a little syrup, of any kind, until relief be obtained. If the stomach be too irritable to allow the camphor to remain upon it, an injection composed of thirty or forty grains of finely powdered camphor, one drachm of laudanum, and three ounces of thin starch or flax-seed tea, may be given, and repeated if necessary. The volatile tincture of guaiacum, as directed in *suppressed* menstruation, is recommended, as the best remedy calculated to produce a permanent cure.

CESSATION OF THE MENSES.—*Commonly called the “Turn of Life.”*

THAT period of life at which the *menses* cease to flow is likewise very critical to the sex. The stoppage of any customary evacuation, however small, is sufficient to disorder the whole frame, and often to destroy life itself. Hence it comes to pass, that so many women either fall into chronic disorders, or die about this time. Such of them, however, as survive it, without contracting any chronic disease, often become more healthy and hardy than they were before, and enjoy strength and vigor to a very great age.

If the *menses* cease all of a sudden, which is seldom the case, in women of a full habit, they ought to abate somewhat of their usual quantity of food, especially of a more nourishing kind, as flesh, eggs, &c. They ought likewise to take sufficient exercise, and to keep the body open. This may be done by taking, once or twice a week, a little rhubarb, or an infusion of *hiera picra* in wine.

“At this period of life, nothing will so effectually secure the woman against injuries which may arise from the irregularities of the menstrual discharge, as a well regulated regimen. By regimen, in this place, we would wish to be understood, not only eating and drinking, but exercise of both body and mind, including the proper government of the passions; in a word, every thing which relates to both moral and physical existence.

A well ordered course of exercise in the open air, in well selected weather, and great simplicity of diet, is of the utmost importance to the female at this period of life, and should never be neglected, if it be possible to indulge in them. By these means that

condition of the system termed health may be maintained. Hence, the justness of the remark, that the women who live in the country, and who exercise freely in the open air; who have fulfilled their duties scrupulously as mothers, by suckling their children, agreeably to the views of nature, who do not goad their systems by over-stimulating food and drinks; who do not relax their bodies by too long indulgence in bed, have but little suffering at this period.

From this it will follow, that a milk and vegetable diet, together with pure water as a drink; regular exercise, not carried to fatigue; keeping the bowels open, by well selected food, as the fruits of the season in proper quantities; the bran bread, if necessary; but not by medicine, unless absolutely required; governing the temper; restraining the passions, as well mental as animal, will largely contribute to the safety and comfort of this period. All that we have just recommended, is calculated to put the system in a condition, by which it shall preserve its various forces; have its irritability diminished; its sensibility moderated; and pretty certainly prevent that condition of the blood-vessels, most decidedly unfriendly to the general health at this time, called plethora. And, though last, not least in fair estimation, is an attention to cleanliness. The external organs should be washed with luke-warm water at least twice a-day, and the whole body once a week, by going into a luke-warm bath. In using the bath, care should be taken to come out of it as soon as the purposes of cleanliness are answered."

Should any scirrhus or cancerous affection of the uterus take place on a stoppage of the menstrual flux, as sometimes happens, all that can be done in such cases is to have recourse to palliatives, such as opium, henbane, and hemlock, in the manner pointed out in the diseases wherein these medicines are indicated.

It often happens that women of a gross habit, at this period of life, have ulcerous sores break out about their ankles, or in other parts of the body. Such ulcers ought to be considered as critical, and should either be suffered to continue open or have artificial drains substituted in their stead. Women who will have such sores dried up, are often soon after carried off by acute diseases, or fall into those of a chronic nature.

DISEASES OF PREGNANCY.

THOUGH pregnancy is not a disease, yet it is a state often attended with a variety of complaints which merit attention, and which sometimes require the assistance of medicine. Some women indeed, are more healthy during their pregnancy than at any other time; but this is by no means generally the case; most of them being frequently indisposed during the whole or greater part of the time of their gestation. Few fatal diseases, however, happen, during this period; and hardly any except abortion that can be called dangerous.

During a state of pregnancy, three different stages evidently exist, each of which has a distinct set of symptoms; nor need we be surprised, when we come to consider the alteration the constitution suffers as a consequence of impregnation, at the many complaints and irregularities which then arise. The first state of pregnancy is usually attended with a suppression of the menses, accompanied with frequent nausea and vomiting, particularly in the morning, heartburn, indigestion, peculiar longing, head-ache, giddiness, tooth-ache, and sometimes a slight cough: the breasts become enlarged, shooting pains extend through them, and the circle round the nipple alters to a dark brown color. A feverish tendency, with debility, emaciation, irritability, and peevishness of temper, and a total alteration of the countenance, every feature of which becomes much sharpened, also frequently occur. During the whole or greater part of the second stage of gestation, as well as the first, the vomiting will continue with some women; this, however, does not usually happen.

Partial suppressions of urine, with a frequent inclination to void it; itching about the external parts of generation, costiveness, inclination without ability to go to stool, and the piles, are what pregnant women are chiefly incommoded by during the second stage.

QUICKENING.—Most women quicken about the sixteenth week after conception, at which time the mother becomes sensible of the slightest efforts of the child; and besides the complaints just enumerated, she will then be liable to sudden faintings, and slight hysteric affections.* During the last three months, or third stage

* According to the opinion most commonly received, quickening, thus termed, has been generally understood to commence at the time when particular sensations are perceived by the mother, supposed to be occasioned by the first motion of the child. The most usual

of pregnancy, general uneasiness, restlessness (particularly by night,) costiveness, puffy swellings of the feet, ancles, and private parts, cramps in the legs and thighs, difficulty of retaining the urine for any length of time, varicose swellings of the veins of the belly and lower extremities, and the piles, are the affections which usually prove most troublesome. In delicate and weak women, of an irritable habit, convulsive fits sometimes arise, which are ever to be regarded in a dangerous point of view.

NAUSEA AND VOMITING.—These symptoms most frequently arise immediately on first getting out of bed in the morning; under such circumstances, therefore, it is advisable for the patient never to rise until she has taken a dish of tea or coffee, or whatever else she may have been accustomed to substitute for her breakfast. Should the vomiting at any time become so severe as to threaten abortion from the violence of the straining, it may then be advisable to direct two or three table-spoonsful of the saline medicine to be taken every now and then in such a manner as the effervescence shall ensue after it is swallowed. The patient also should keep the body open with some gentle laxative. Should these means not succeed, about six ounces of blood may be drawn from the arm, and, if necessary, repeated in a week's time.

[Bloodletting should be resorted to in all cases where inflammation of the stomach is present; but cannot be resorted to with propriety in every case of sick stomach. A too general use of the lancet in pregnancy is reprehensible. Solutions of the acetate of ammonia and of the acetate of potash, are among the best internal remedies. When there is much vomiting the bowels are apt to become torpid; in such cases cathartics should be used sufficiently often to keep them regular. Cooke's, Lee's, or Anderson's pills may be used. In delicate, nervous females, however, senna, or rhubarb and magnesia are preferable. Cordials and carminatives are not good except in combination with purgatives. If there is loss of appetite, a gentle tonic may be added to the cathartic; columbo, rhubarb, and magnesia may be used with benefit, and should be given about noon each day. As soon as the uterus rises out of the pelvis the vomiting generally stops.—Sometimes there is no vomiting in the early stages, but it comes on in the latter months; re-

time of feeling any such symptoms is about the latter end of the fourth or beginning of the fifth month of pregnancy: at this period the uterus filling up the pelvis slips out and rises above the rim; and from that sudden transition, women of a delicate constitution and irritable fibre are apt to faint, more particularly so if in an erect position.

quiring the most prompt and serious attention. It is generally produced by a tendency to inflammation in the mucous lining of the stomach, or by derangement of the liver. The treatment must have reference to these causes. The stomach cannot be quieted until the secretion of the liver is restored. Calomel is the best remedy. There is no danger in adequate purgative doses; there is more danger in small doses, alteratives, as they are called. Add to the calomel, scammony, aloes, or castor oil, &c. The oil is the most certain. If there be fever, soreness of the stomach, or much pain, bleed from the arm; and use warm fomentations and the hip-bath.]

To abate excessive vomiting local applications have been recommended. For example, a piece of folded linen cloth, moistened with the tincture of opium, may be kept constantly applied to the stomach; the addition of a small portion of ether may increase its effect. It sometimes happens that vomiting continues incessantly for many days, accompanied with great prostration of strength, and constant thirst, with, at the same time, an utter impossibility of retaining any thing on the stomach. Under these circumstances the application of leeches to the pit of the stomach, and a constant attention to swallow nothing that can irritate, have afforded relief. If much nausea should prevail without the possibility of throwing up, fourteen or fifteen grains of the powder of ipecacuanha may then be given, experience having proved that gentle emetics may be safely administered to pregnant women.

HEARTBURN.—When a pregnant woman is incommoded by heartburn, (which commonly arises from acidity in the stomach,) half a drachm of magnesia may be taken morning and evening; and, if this fail to obviate it, the absorbent mixture advised below * may be used, which Dr. Sims says he has found the most efficacious of all remedies for the removal of this distressing complaint.

[Heartburn is generally most distressing in the latter months. It is always aggravated by cordials, sweetmeats, oils, butter, &c. It is often accompanied by torpid bowels. Calcined magnesia, prepared chalk, charcoal, and other laxatives and absorbents may be given with benefit. It is sometimes attended with emaciation; in which case bitter tonics, as columba, or quassia, in combination with cathartics, may be taken with advantage. If these remedies

* Take	Magnesia,	1 drachm.
	Pure Water,	5 ounces.
	Spirit of Cinnamon,	3 drachms.
	Solution of Ammonia,	1 drachm.

Make a mixture, of which two or three table-spoonfuls may be taken occasionally.

cannot be taken in powder or solution, they may be made into pills. Attention should be paid to the diet, as the symptom frequently originates, or is aggravated by it.]

HEAD-ACHE.—When either drowsiness, a sense of fulness of the vessels of the head, or head-ache, prove troublesome to pregnant women, taking away a few ounces of blood from the arm in robust women will most likely prove serviceable. In women of a weak, irritable habit the application of a leech or two to each temple will be more advisable than bleeding from the arm, where the head-ache proves obstinate, and resists the other means employed.

[There are two kinds of head-ache occurring in pregnant women, the pathology and treatment of which are very different. The first generally occurs in females with short necks, and of a full habit of body. The face is flushed, with more or less derangement of the external senses; the pain extends throughout the head, and is increased by light, rustling of the bed-clothes, or whispering; the pulse is full, strong, and preternaturally slow; the pain is increased in the recumbent posture, and eased by setting up; torpid, inactive bowels; the tongue white, if furred at all. It sometimes commences with gestation, but is most likely to occur in the last three months. If not arrested it is apt to terminate in apoplexy, or violent convulsions.—Bleed for effect—the blood must be allowed to flow until the pulse becomes soft and is increased in frequency. Evacuate the bowels by active cathartics, as calomel, aloes and jalap, or an infusion of senna holding in solution Epsom salts. Cold water should be freely applied to the head. Twelve or fifteen ounces of blood, drawn from the arm, with an active cathartic, will generally suffice in the early stage—pounds will not answer at a later period.]

The other form of head-ache is dyspeptic in character. The pulse is small, and weak; the skin cool; the mind desponding; with nausea, and acid cructations. The pain is confined to half the head, or over one eye, or to the back part. In this variety, an emetic of mustard or salt water, or of ipecac. and mustard, may be used with great benefit. Counter-irritants, and opium in small doses, may also be employed with advantage. If the bowels are torpid, give gentle laxatives; use the vegetable acids freely, and occasionally resort to mild clysters.]

COSTIVENESS, PILES, &c.—Costiveness, partial suppressions of urine, and the piles, which attend on the second stage of preg-

nancy, are occasioned by the great pressure of the uterus on the rectum and bladder. The first and last of these symptoms are to be obviated by a daily use of some gentle laxative; such as a solution of manna, or the subjoined electuary.* When the piles are troublesome, the best applications, when they can be applied, are leeches and cold saturnine lotions, as a solution of the superacetate of lead. To allay the irritation, ten grains of the superacetate of lead, dissolved in four ounces of rose-water, to which if necessary, a little of the vinous tincture of opium may be added, form a good lotion.

[The best remedy for obviating costiveness, in pregnancy, that has fallen to my knowledge is, pills composed of one grain of aloes and one grain of jalap. One pill must be taken night and morning, or every night, as may be required. I have used these pills in a great number of cases, without a failure.]

TOOTH-ACHE.—The health of the teeth is intimately connected with, and dependent on, the condition of the stomach. In pregnancy, uterine influence frequently produces tooth-ache. The tooth should never be extracted under such circumstances, for if one is drawn another will become affected; the shock, also, might frequently produce abortion. Address remedies to the stomach; give nauseating portions of ipecacuanha, and attend to the bowels. Small portions of Dover's powder may often be given with advantage. Avoid the application of essential oils to the teeth, as well as the use of acid or stimulating washes.]

LONGINGS.—It is always desirable to gratify the peculiar longings of pregnant women, otherwise they are apt to miscarry from the anxiety these occasion, when not indulged in them. But that the child in the womb can be marked by any depraved appetite of the mother, or be mutilated by any disagreeable sight that may be presented to her, cannot readily be admitted.

[The diet of pregnant females is a matter of importance. The usual quantity of food should not be departed from, as innovations of this character very frequently give rise to disease. Sometimes the appetite becomes entirely changed, the female during pregnancy not being able to eat her most favorite articles of diet, while,

* Take Confection of Senna, 1½ ounce.
 Cream of Tartar, † ounce.

The size of a nutmeg to be taken occasionally.

at the same time, she desires food which at another period would only excite disgust and loathing. This has been ascribed to the influence of the fœtus; but it is often found in men and children, worms frequently giving rise to it. There is no danger in restraining the appetite. Stimulating articles of diet or drink should not be taken. The lighter and more nutritious her diet, the better will her health be. Ripe acid fruits may be indulged in without danger.]

HYSTERIC.—Should sudden faintings, or any other hysterical affection, arise, little more will be necessary than to expose the patient to a free open air, to place her in a horizontal position, and to give her a glass of cold water, with a few drops of hartshorn, or a little wine sufficiently diluted.

[Palpitation of the heart is not a fatal affection, but if it be allowed to continue, it may exert an unfavorable influence on the contents of the womb. It is connected either with torpor of the bowels or plethoric habits. Sleeping in feather beds often gives rise to it. If the face be flushed, recourse may be had to blood-letting; but reducing the diet will often do as well, in connection with active exercise. If fainting is threatened or present, or paroxysms of difficult breathing come on, they must receive immediate attention. During the paroxysm the remedies mentioned above may be employed, with the addition of mustard cataplasms to the chest and extremities, and occasional doses of ether or laudanum. Daily evacuations from the bowels are the best means of preventing the return of the paroxysms. If not checked in the beginning, they are apt to become periodical.]

DIARRHŒA.—Diarrhœa during pregnancy should be treated just as at any other time; and after the stomach and intestines are cleared astringents may be used, if there be no great degree of fever present; but should there be fever, that must be attended to and first removed.

SUPPRESSION OF URINE.—To relieve the suppression of urine that frequently takes place in the advanced state of pregnancy, besides making use of emollient fomentations, clysters, and gentle purgatives, such as castor-oil, &c., the patient at the same time, drinking plentifully of diluent liquors, surgical aid will be necessary to draw it off morning and evening by means of a catheter.

TROUBLESOME ITCHING.—When these sensations arise about the

parts of generation during the pregnant state, it will be proper to keep the body perfectly free with some cooling laxative, and to wash the parts three or four times a day with a solution of lead, or the diluted solution of the acetate of lead. If much irritation accompany this itching, leeches may be applied to the place.

PUFFY SWELLINGS of the feet, ankles, and private parts, which are apt to arise towards the end of pregnancy, are occasioned by the pressure of the womb on the returning vessels, which prevents the blood being carried back to the heart. Gravid women are usually free from these complaints in the morning, but towards night they frequently suffer much from them. Slight scarifications from the edge of a lancet, to discharge the stagnated fluid, with the after application of flannels wrung out in a warm infusion of emollient herbs, have been employed in cases of great distension. In general, however, it will only be necessary that the patient does not keep her feet in a pendent position for any length of time.

[Cathartics will seldom fail to remove the swelling in a great degree, if not entirely. A solution in water of two parts of the carbonate to one of the sulphate of magnesia, is an admirable remedy in such cases—it will act on the bowels, kidneys, and skin. Diuretics are of no use, where the dropsical effusion is altogether the result of pregnancy. Mercurial cathartics should be used in sufficient doses to operate freely. When the swelling depends on a dropsical diathesis, the same means must be employed for its removal that are proper in dropsy of the unimpregnated female. It is the general opinion; that a radical cure ought not to be attempted during pregnancy; but there is more to be feared from the dropsy than from the remedies calculated to cure it. Bandages may be worn to excite absorption in all cases.]

CRAMPS OF THE LEGS AND THIGHS are to be relieved by rubbing the parts with cold vinegar; camphor dissolved in oil, or other liniments, the person wearing stockings in bed. At an advanced period of pregnancy they are only to be relieved by labor removing the cause. Proper doses of ether and tincture of opium, with the means advised in hysterical affections, will afford the greatest benefit where the stomach is affected with spasms. In such cases the patient will do well to avoid all kinds of food that are apt to prove flatulent and hard of digestion, and keep the body perfectly open. [More dependence may be placed on cathartics, in such cases, than on all other remedies combined.]

RESTLESSNESS AND WANT OF SLEEP prove troublesome complaints towards the latter end of pregnancy, obliging the patient to rise frequently throughout the course of the night, in order to expose herself to the influence of cool air. In cases of this nature nothing affords relief so effectually as small bleedings, with the occasional use of some cooling laxative medicine. Opiates, in such conditions, are never attended with any advantage.

VARICOSE VEINS.—Considerable enlargement and distension of the veins of the legs, thighs, and abdomen often take place to an alarming extent in the last stage of pregnancy. But, as no bad consequences have been observed to attend this state, the only thing necessary to be done is to empty the vascular system by moderate bleeding, gentle purging, and a spare diet. Should, however, the vein of any particular part become so distended as to prove troublesome, it may be advisable to apply a bandage of a moderate tightness, so as to give the necessary support to it.

JAUNDICE.—Pregnant women, in some instances, are afflicted with a pain in the side, excessive sickness at the stomach, and retchings, the skin assuming a deep yellow tint; under which circumstances alone the complaint proves distressing; and it is usually occasioned by the formation of one or more gall-stones, and the obstructions they oppose to the usual and regular passage of the bile. The most efficient means to relieve the patient from this degree of the complaint, bleeding, fomentations of the painful part, and opium, with such laxatives as shall counteract the constipating effects of the latter. When jaundice or any other bilious effects prevail during pregnancy, in consequence of the pressure kept up by the womb on the gall-bladder or ducts, it is to be obviated by keeping the body open with some gentle laxatives, as pills composed of jalap and rhubarb and calomel. [The practice in jaundice must be energetic, as it is very liable to suspend gestation if allowed to go on. For a detail of the proper treatment, see the article on *Jaundice*.]

INCONTINENCY OF URINE is to be removed only by delivery, but may admit of being partially relieved by the horizontal posture. The bad effects of this very disagreeable complaint, may be prevented by a scrupulous attention to cleanliness, and the use of a thick compress of linen, or a sponge of considerable size, properly fastened.

OVER-DISTENSION OF THE SKIN.—The skin of the abdomen, in the latter months of pregnancy, will sometimes become cracked and sore. In this case nothing is more effectual than the frequent use of warm oil by friction; to which a little camphor may be added to give it somewhat of a medicated appearance.

FALSE PAINS, resembling those attendant on actual labor, are apt to come on at a late period of pregnancy, often occasioning unnecessary alarm. Confinement in a horizontal position; bleeding, if of a full habit; laxative medicines if costive, and giving small and frequent doses of some opiate until the patient finds ease, will, in such cases, be necessary.

[INFLAMED BREASTS.—When there is a tendency to inflammation of the breasts in pregnancy, it may generally be subdued by frictions with a mixture of oil and camphor, or of oil and laudanum. Blood-letting should be resorted to in violent cases; and due attention paid to the bowels. The breasts must be kept warm by cotton-bats or a rabbit skin. If suppuration is about to supervene, an emetic should be given, and the bowels opened by a brisk cathartic.]

TREATMENT OF PREGNANT FEMALES.

[The remarks which follow are from the pen of Professor John E. Cooke. They are the result of many years experience, and are worth everything else that has ever been written on the subject.]

“Vomiting has the effect in a remarkable manner of distributing the blood equably throughout the system, and therefore powerfully counteracts any tendency to congestion in the internal veins, which may happen to be present. Such a tendency exists in the system during the first months of pregnancy; as is manifest from the consideration, that the regular periodic discharge of menstrual blood does not appear—and this being the case for several successive periods before there is a call for the whole of the blood retained, for the growth of the fœtus, there must be an accumulation in the vessels, greater or less in proportion to the circumstances of the patient, and which in those who are previously in a state of congestion from other causes, must often produce such a degree of it as to give rise to morbid effects. That such

effects do appear, as are often produced by congestion, every practitioner may have observed. The patient is, for instance, costive, troubled with headache, vertigo, drowsiness, pain in the back, sallow and of a bilious cast, and frequently distressed with piles. Moreover, as soon as the counteracting influence of the daily vomiting ceases to be exerted, the presence of internal congestion is shown by the frequent occurrence of hæmorrhage from the uterine vessels, preceded and accompanied by other effects of congestion. It is manifest that the daily vomiting tends to keep the blood circulating, and that when this ceases, the superfluous blood, if there be any, must accumulate in the interior veins. There is, therefore, a strong tendency to congestion in early pregnancy, and the daily vomiting is admirably adapted to counteract it.

“The inferences to be drawn from these remarks are, that in early pregnancy the vessels of the uterine system are in a state of congestion—that this state is counteracted by the daily vomiting—that we ought not to stop this if we could, without substituting some other effectual means of preventing the effects of congestion, or without removing congestion—and that if we were to do so, without removing congestion, we should probably bring about, by stopping the vomiting, the effect observed often to occur even when it spontaneously ceases, hæmorrhage and abortion. We may also infer that a remedy which daily tends to lessen congestion, is well adapted to prevent the evil effects that would flow from a cessation of the vomiting, and therefore to render the vomiting unnecessary, and consequently to put an end to it. Such a remedy is found in those medicines which keep the bowels in a moderately loose state; and not only is the vomiting relieved, but the tendency to hæmorrhage and abortion prevented, by procuring two or three passages daily. And even after hæmorrhage has appeared, the same treatment is effectual in carrying it off. In this case however the practice should be a little more active; and such a number of pills of jalap or rhubarb with aloes and calomel, as will operate briskly, I have long relied on in such cases; and have found the hæmorrhage almost always disappear as soon as the medicine acts freely—and if there is any remaining, it soon ceases, under the continued operation.

“Not only is the danger from hæmorrhage obviated in this way, but other effects of congestion, headache, and pains in other parts, and all the uncomfortable feelings which flow from a costive state, are carried off, or never appear if the plan be early adopted.

“ After the pregnancy has advanced a few months, the action of the heart, it has long been observed, becomes more and more vigorous, until at length it is so strong as to have caused some writers to speak of such patients as being in an inflammatory state, and always bearing bleeding well, and often requiring it in every malady that befalls them. During this period, women are most generally free from disease; but in the progress towards it, some of the effects of congestion are often present, so that a loose state of the bowels is to be preserved in order to keep them in the most favorable condition. They are often at this middle period of pregnancy, under no necessity of taking any thing to move the bowels; but being in a vigorous state of health, the system acts as it should in this as in other respects. Under the influence, however, of some of the remote causes of disease, we occasionally find patients laboring under various morbid affections. We find them suffering from disordered state of the liver, stomach and bowels, kidneys, head, uterine system, and even the skin. Thus I have seen a patient, who had lived a luxurious, indolent life, without exercise, and who had been in a bad state of health from these and other causes, and repeatedly miscarried, with the following train of symptoms. Vertigo and other similar distressing affections of the head, disordered state of the stomach, liver and bowels, leucorrhœa, and occasionally hemorrhage from the uterine vessels, and erysipelatous blotches of the skin appearing and disappearing. All these yielded to the continued use of medicines which produced a laxative state of the bowels. The head, the stomach, the liver and bowels, the skin, were all relieved—the leucorrhœa and the menorrhagic symptoms disappeared, and although the patient had repeatedly miscarried, not having had a living child for several of her last pregnancies, she went on safely the full time under this plan of treatment. What made this case somewhat more remarkable was the circumstance, that her sister-in-law, (whose manner of life was similar, and who had in every pregnancy incurred great danger from hemorrhage,) being at the same time pregnant, her husband, who was a physician, consulted me in her case. He was advised to treat her as above. He refused, in a very pointed manner, to adopt it. She went on as usual, fell into hemorrhage, and after suffering a great deal, died.

“ In every combination of the symptoms above mentioned, with hæmorrhage or without, the plan mentioned has been followed with the most marked success. Hæmorrhage is not however so apt to take place in this middle period of pregnancy as at a more

advanced stage. It might be considered sufficient to state the fact: it is allowable however to mention some circumstances which may tend to produce this, particularly as a hint may be drawn therefrom as to the treatment which may be advisable in order to prevent it. When the patient is in the vigorous health above mentioned as often occurring in mid-pregnancy, the appetite is almost insatiable. The consequence is, the formation of an immense amount of blood, more by far than the system requires for itself and for the fœtus. Congestion is the inevitable consequence of this, notwithstanding the increased activity of the heart—all beyond that quantity which it is capable of circulating, necessarily falling into and accumulating in the great interior veins. This view of the matter would lead to the conclusion, that diminishing the fulness of the vessels would tend to prevent miscarriages; and this is true, undoubtedly. Hence the laxative state of the bowels should be attended to.

“It is unnecessary to particularize all the symptoms which occur in pregnancy, the heart-burn, the piles, the colic, œdematous swelling of the limbs, &c., and all the rest are prevented by the early adoption of the plan proposed, and are relieved and carried off by the same if adopted after their appearance.

“Patients so treated are moreover free from that inability to move actively, which is a very common result of indolence and full living. The vessels are loaded with blood, so as apparently to interfere with the action of all the muscles. Be this as it may, the fact is, that the use of such remedies removes the stiffness of the limbs, the inactivity of the body, and the patient moves about with life. This may be in part owing to the removal in some degree of œdematous swelling of the limbs, not yet perceptible. It is certain that such a swelling would in some degree interfere with the action of the muscles of the limb; and it is equally certain that when such swelling has advanced, so as to be manifest, a laxative state of the bowels continued as above mentioned, will carry it off entirely.

“During a residence in Winchester, Virginia, for several years, I had the regular care of a great number of persons whenever in labor, and this plan was uniformly adopted; and it is a remarkable fact that a full fourth part of the number had such easy and speedy labor, that it was impossible to reach the house before it was over. They were all in town.

“After child-birth, a fever almost invariably comes on, in about two or three days. Those who are not treated in the way pro-

posed, during pregnancy, fall most inevitably, from the length of time they are in that state, and from the various causes acting upon them in the course of it, into a state of congestion. If this be considerable, the fever which follows parturition is so too, and is often extremely violent. The obvious mode of preventing this, is to keep down congestion, which is to be effected by laxatives, and these are so effectual, that, excepting cases of extreme imprudence, as where a patient arose on the day she was delivered, and went to the door to speak to the servant in the kitchen, in February, when the ground was covered with snow, I have never known a fever to be worth regarding if the patient followed the plan faithfully during pregnancy, and afterwards for a short time. There need be no interruption, at least of more than a day, that immediately following the labor, during which the discharge of blood is considerable; and no evil arises from taking the medicine on that day.

“The fever occurring in consequence of such exposure, or in cases in which the patient had not been thus treated during pregnancy, has always been readily controlled by bleeding, purging, low diet, cool drinks, free ventilation, and avoiding too great warmth in bed. So far from any impropriety in purging patients in child-bed, they very often require it then more than at any other period of their lives. They have been living for months a sedentary life, eating freely, and have become full of blood. This by the vigor of the action of the heart above mentioned, has been kept circulating with great force up to the time of delivery. During labor they are depressed, by fear, exhausted by their almost incredible efforts, and the action of the heart sinks down, frequently, into extreme feebleness. The blood being now thrown into the arteries in much smaller quantities than before, is necessarily left in the great veins, which pour it into the heart.

“In this state of things it is evident that the only way to relieve the patient is to lessen the fulness of the vessels. The pulse is however often so low that bleeding is unsafe, and I have seen a patient die in five or ten minutes after bleeding. The only other way left to effect this object is by procuring free discharges from the liver, which being supplied with blood for the secretion of bile by these very veins, discharges from it take off, in a very direct manner, from their fulness, lessen the tension, and remarkably relieve all the symptoms, pain, &c. Such discharges are in general readily produced by the common mercurial cathartics. Sometimes, however, extreme difficulty occurs, and there is no alternative but this,

to persevere until the object is effected, or let the patient die. I have seen a patient take pills of scammony, aloes and calomel in this state, with the most marked advantage from the discharges; so that upon the cessation of the operation in the night for some hours, the pain returned, and continued severe until the discharges were restored by the same means, when it immediately ceased. It is to be remarked, that, as any cathartic medicines sometimes produce griping even in persons in pretty good health, these medicines in the painful state the bowels are, in the disease under consideration, often produce severe pain. Senna and salts do the same. But this is an unavoidable inconvenience. The patient must bear it, or cease from all efforts to escape death

“Those who use the cathartic medicines, as above mentioned, regularly during the last months of pregnancy, are preserved also from the distressing swelling of the breasts—so that I have no recollection of any case in which the patient, if treated thus, was under the necessity of having the breast lanced. By keeping down the feverish state, and avoiding distention from the superabundance of milk, by regular attention to having it drawn off, the inflammation is effectually guarded against.

“Sometimes the discharge immediately following the birth, called the lochia, ceases entirely on the first or second day. The consequence of this is fever, and frequently excessive hæmorrhoidal swellings. To prevent both, the moment the discharge is known to have ceased, pretty free discharges from the bowels should be procured. The mercurial cathartics, as rhubarb, aloes, and calomel, are very effectual. If the piles are very sore and painful, and the mercurial cathartics are slow in acting they may be aided by small doses of Epsom salts—about a drachm every two or three hours until they begin to act. Two or three drachms are generally enough. The same will be found very beneficial when the discharges are acrid and painful. The pain and soreness will be removed in a very short time in this way, if it be followed early; say on the first day of their appearance: afterwards it is less effectual, but still useful.

“Another disease that women in child-bed are liable to is the phlegmasia dolens, or as it is commonly called, the swelled leg. In general the physician is not called to take charge of such cases until the leg is excessively swelled, tense and shining. But in the commencement of the enlargement the leg is soft and even œdematous: at least I have known such cases. The first symptom which attracts the patient’s attention is severe pain in some part

of the leg; generally in the calf, or on the inside of the thigh, just above the knee, and sometimes higher up, and even in the groin. This is the time to be of service to the patient—little can be done after the leg is fully swelled. The disease takes its course notwithstanding all the efforts of the physician, as far as my acquaintance with the subject extends, and the patient seldom recovers the use of the limb in less than three months. If in the commencement the patient be bled, and purged actively, and blistered upon the part where the pain is, the disease is soon carried off—sometimes in a few days—at others in a week or two. If the pain, after being removed from one part, attack another, another blistering plaster should be used, and another if necessary.

“The result of the whole matter is, that in the course of a number of years’ practice, in which the plan proposed, of purging moderately but almost daily during the latter months of pregnancy, was followed by a number of women of every rank, in this country, the relief throughout from the various aches and ails incident to that state, was such, that there was no difficulty in inducing them to attend to the prescription—there was never a case of convulsions to harass the physician and the patient—never a case of puerperal mania—never a case of lingering, tedious and harassing labor—never a case but the one stated of puerperal inflammation—no dangerous illness following delivery—no fever—and nothing distressing but two cases of swelled leg—and both of these were speedily relieved by a more vigorous prosecution of the same plan of treatment, by purging with mercurial cathartics, together with bleeding, and likewise blistering that part of the leg which was in pain.”

CONVULSIONS.

CONVULSIONS may take place either during pregnancy or labor. These are of different kinds, requiring opposite treatment. One species is a consequence of great exhaustion from a tedious labor, excessive fatigue, and profuse hemorrhage; which makes its attack without much previous warning, and generally alternates with faintings, or great depression of strength, and debility: the muscles about the face and chest are chiefly affected, and the pulse is small, frequent, and compressible, the face pale, the eyes sunk,

the extremities cold. The fits succeed each other rapidly, and very soon terminate in a fatal syncope. In all cases, of this nature, the first object should be directed towards restraining the hemorrhage if present, or preventing any kind of exertion, thus husbanding the remaining strength, or recruiting it by cordials. In conjunction with ether and camphor, opiates will be of considerable service. Delivery is usually necessary.

The other species of convulsions, which are those of an hysterical nature, are more common during gestation than during parturition. In this case it may only be necessary to add to what has been already said relative to hysterics (p. 509), that if they do not speedily yield to antispasmodics, bleeding must be resorted to: should this fail, the woman, if possible, should be delivered.

Puerperal convulsions seldom happen before the sixth month, but may occur at any time between this period and the completion of labor. They may arise as the first symptom of labor, or after delivery. This species of convulsion depends on the state of the uterus, and has been remarked to occur more frequently during the first pregnancy than in any subsequent one, particularly where the woman is unmarried.

To prevent the occurrence of puerperal convulsions, as they are in every instance to be considered highly dangerous, particularly at an advanced period of pregnancy, it is advisable in women of robust and plethoric habits to bleed frequently during the progress of pregnancy, taking care, at the same time, and particularly near the termination of pregnancy, to keep the body open by cooling purgatives. In women of an unstable constitution, all exciting causes should be carefully avoided, and the habit be strengthened as much as possible, and by that means rendered less susceptible of disagreeable impressions.

ABORTION.

EVERY pregnant woman is more or less in danger of abortion. This should be guarded against with the greatest care, as it not only weakens the constitution but renders the woman liable to the same misfortune afterwards.* Abortion may happen at any

* Every mother who procures an abortion does it at the hazard of her life; yet there are not a few who run this risk merely to prevent the trouble of bearing and bringing up children. It is surely a most unnatural crime, and cannot, even in the most abandoned, be viewed without horror; but in the decent matron, it is still more unpardonable.

period of pregnancy, but it is most common in the second or third month. Sometimes, however, it happens in the fourth or fifth. If it happens within the first month, it is usually called a false conception ; if after the seventh month, the child may often be kept alive by proper care.

The common causes of abortion are, the death of the child ; weakness or relaxation of the mother ; great evacuations ; violent exercise ; raising great weights ; reaching too high ; jumping, or stepping from an eminence ; vomiting ; coughing ; convulsion-fits ; blows on the belly ; falls ; fevers ; disagreeable smells ; excess of blood ; indolence ; high living, or the contrary ; violent passions or affections of the mind, as fear, grief, &c.

The signs of approaching abortion are, pain in the loins, or about the bottom of the belly ; a dull heavy pain in the inside of the thighs ; a slight degree of coldness, or shivering ; sickness ; palpitation of the heart ; the breasts become flat and soft ; the belly falls ; and there is a discharge of blood or watery humours from the womb.

To prevent abortion, we would advise women of a weak or relaxed habit to use solid food, avoiding great quantities of tea, and other weak and watery liquors ; to rise early and go soon to bed ; to shun damp houses ; to take frequent exercise in the open air, but to avoid fatigue ; and never to go abroad in damp foggy weather, if they can help it. Women of a full habit ought to use a spare diet, avoiding strong liquors, and every thing that may tend to heat the body, or increase the quantity of blood. Their diet should be of an opening nature, consisting principally of vegetable substances. Every woman with child ought to be kept cheerful and easy in her mind. Her appetites, even though depraved, ought to be indulged as far as prudence will permit.

When any signs of abortion appear, the woman ought to be laid in bed on a matress, with her head low. She should be kept quiet, and her mind soothed and comforted. She ought not to be kept too hot, nor take any thing of a heating nature. Her food should consist of broths, rice and milk, jellies, gruels made of oat-meal, and the like, all of which ought to be taken cold.

If she be able to bear it, she should lose at least half a pound of blood from the arm. Her drink ought to be barley-water sharpened with the juice of lemon ; or, she may take half a drachm of powdered nitre, in a cup of water-gruel, every five or six hours. If the woman be seized with a violent looseness, she ought to drink the decoction of calcined hartshorn prepared. If she be affected

with vomiting, let her take frequently two table-spoonsful of the saline mixture. In general, opiates are of service; but they should always be given with caution.

Sanguine, robust women, who are liable to miscarry at a certain time of pregnancy, ought always to be bled a few days before that period arrives. By this means, and observing the regimen above prescribed, they might often escape that misfortune.

Though we recommend due care for preventing abortion, we would not be understood as restraining pregnant women from their usual exercise. This would generally operate the quite contrary way. Want of exercise not only relaxes the body, but induces a plethora, or too great a fulness of the vessels, which are the two principal causes of abortion. There are, however, some women of so delicate a texture, that it is necessary for them to avoid almost every kind of exercise during the whole period of pregnancy.

Where abortion cannot be prevented, the next indication is to conduct the patient safely through the process, by directing our immediate attention to the hæmorrhage; to check which, bleeding is resorted to by some practitioners; but, unless the vessels be above their natural force and strength of action, it is not likely to be of any service. Astringent injections, composed of alum, oak bark, or sulphate of zinc, and cold applications to the loins, are often employed in floodings; and where the hemorrhage is slight, these immediately will prove beneficial; but in floodings without any remission, they do not appear calculated to afford much relief. In such cases it will be best to trust to the formation of a coagulum: enjoining rest, giving an anodyne at bed-time, and keeping the bowels open by some gentle aperient. But, where these means have been pursued without effect, and the woman becomes exposed to imminent danger from great loss of strength, the most powerful astringents must be employed; such as the sulphate of zinc* and superacetate of lead;† of the last, one, two, or three grains may be given, repeating the dose every three or four hours according to the urgency of the case. As soon, however, as the hemorrhage has stopped, give a dose of castor-oil in order to prevent

* Take	Sulphate of Zinc,	2 to 5 grains.
	Confect. of Roses.	‡ scruple.
	Opium,	‡ grain.

Make a bolus, to be taken every fourth hour.

† Take	Superacetate of Lead,	2 grains.
	Opium,	‡ grain.

Make a pill, to be given every hour, should it be required, until six pills are given.

any bad effects from the action of these remedies on the coats of the stomach and intestines. The application of cloths dipped in cold water to the back and external parts will have a much better effect than internal astringents, consequently ought never to be neglected. The introduction of a piece of smooth ice into the vagina has often a very speedy effect in arresting the hemorrhage. A snow-ball wrapt in a bit of soft linen will have the same effect; but neither of these should be continued so long as to cause pain.

The most effectual means, then, to be resorted to for relieving the hemorrhage attendant on abortions are : if the pulse be full, hard, and frequent, bleeding ; if not, the foxglove is to be trusted to, either in the form of pill, tincture, or infusion : the application of cold to the thighs and pubes; admitting a free circulation of air in the patient's bed-chamber; keeping the heat of the body at a low temperature; absolute rest in a horizontal position, which must be continued during the whole process, however long it may be; cold acidulated liquors for ordinary drink; light food taken in small quantities at a time; carefully abstaining from every thing stimulant, and plugging up the vagina.

Sometimes the hemorrhage is kept up by some portion of the ovum remaining partly within and partly without the uterus; when, should circumstances demand it, this should be removed by careful manual interference with a pair of armed forceps.

For some days after abortion the patient should be confined to bed, as getting up too soon is apt to produce a debilitating discharge. Women disposed to abort should the more sedulously avoid the exciting causes of abortion at those dates of utero-gestation when it is most apt to take place.

MANAGEMENT OF CHILDBED WOMEN.

MANY diseases proceed from the want of due care in child-bed; and the more hardy part of the sex are most apt to despise the necessary precautions in this state. This is peculiarly the case with young wives. They think, when the labor-pains are ended, the danger is over; but in truth it may only then be said to be begun. Nature, if left to herself, will seldom fail to expel the *fœtus*; but proper care and management are certainly necessary for the recovery of the mother. No doubt, mischief may be done by too much

as well as by too little care. Hence females who have the greatest number of attendants in child-bed generally recover worst. But this is not peculiar to the state of child-bed. Excessive care always defeats its own intention, and is generally more dangerous than none at all.*

During actual labor, nothing of a heating nature ought to be given. The woman may now and then take a little panado, and her drink ought to be toast and water, or thin groat-gruel. Spirits, wines, cordial-waters, and other things which are given with a view to strengthen the mother, and promote the birth, for the most part tend only to increase the fever, inflame the womb, and retard the labor. Besides, they endanger the woman afterwards, as they occasion violent and mortal hemorrhages, or dispose her to eruptive and other fevers.

PARTURITION,

Is that natural process which, at the expiration of forty weeks from conception, is matured, and by which the womb detaches and expels its contents, and returns nearly to the same condition in which it was previous to its impregnation.

CLASSIFICATION OF LABORS.—The division of labors, originally made by Hippocrates into *natural* and *preternatural*, is sufficiently comprehensive, whilst it forcibly recommends itself by its simplicity and perspicuity.

Natural labor, of which we shall only treat here, supposes four things : 1. That the vertex presents. 2. That there be sufficient room in the pelvis to admit of the ready descent of the child in that direction which permits the occiput or back part of the head

* Though the management of women in child-bed has been practised as an employment since the earliest accounts of time, yet it is still in most countries on a very bad footing. Few women think of following this employment till they are reduced to the necessity of doing it for bread. Hence not one in a hundred of them have any education, or proper knowledge of their business. It is true, that nature, if left to herself, will generally expel the *fœtus* ; but it is equally true, that most women, in child-bed, require to be managed with skill and attention, and that they are often hurt by the superstitious prejudices of ignorant and officious midwives. The mischief done in this way is much greater than is generally imagined ; most of which might be prevented by allowing no women to practise midwifery but such as are properly qualified. Were due attention paid to this, it would not only be the means of saving many lives, but would prevent the necessity of employing men in this branch of medicine, which is, on many accounts, more proper for the other sex.

to emerge under the arch of the pubis. 3. That there be parturient energy adequate to the expulsion of the contents of the uterus, without manual interference; and without danger, either to the mother or child: and, 4. That the process of parturition be completed within a moderate time.

STAGES OF LABOR.—Certain occurrences take place during the progress of parturition which may be managed under three divisions or stages; the *first* comprehends all that may occur before the complete dilatation of the os uteri; the *second* includes all that takes place between the developement of the os uteri and the expulsion of the child; the *third* embraces every thing connected with the detachment and extension of the placenta and its adherent membranes.

SYMPTOMS PRECEDING LABOR.—For several days before the actual existence of labor arrives, there are often certain premonitory symptoms, which, by women who have borne children, are viewed as precursors of that eventful hour which many of them so much dread. Among these are:

1. *Restlessness*, particularly at night, very frequently precedes parturition for days and weeks, and is rarely to be considered as bearing unfavorably in labor.

2. *Subsidence of the womb and abdomen* is not an unusual monitor of the approach of suffering. It may be viewed in a favorable light, inasmuch as it indicates room in the pelvis.

3. *Glairy mucous secretion* from the os uteri and vagina, popularly termed *shew*, sometimes occurs for days before the more active symptoms of labor. It is often streaked with blood, and tends to lubricate the parts concerned in parturition.

4. *Irritability of the bladder and rectum*, demanding their frequent relief, is another occasional precursor of labor.

SYMPTOMS ACCOMPANYING LABOR.—Owing to the resistance which the womb encounters during its contractile efforts, *pain* follows every such contraction; but the pain attendant on parturition differs very materially in its nature, and in its influence on the uterus. These paroxysms of pain are either *intestinal* or *uterine*.

Paroxysms of intestinal pain, or such as are termed false or spurious, may be distinguished from genuine labor-pains by being unconnected with uterine contraction; by attacking different parts of the abdomen; and by recurring irregularly. These pains usually

originate in some source of intestinal irritation, and may almost always be removed by emptying the bowels, and subsequently exhibiting an opiate. By the observant practitioner, should one be present, they cannot be confounded with pain in the bowels.

The true or uterine pains are either dilating or expulsive.

Dilating Pains, or, as they are popularly termed, *grinding* pains, result from contraction of the womb. They are principally confined to the back, and occur in the earliest stage of labor, and are often peculiarly distressing to the patient, who expresses herself by restlessness, despondency, and moaning. They often continue a long time without the intermissions being free from uneasiness, and appear almost exclusively to dilate the mouth of the womb, having little influence over the fundus of the uterus. It is during the existence of these dilating pains that cold shiverings most commonly come on, and may be relieved by avoiding spiced or fermented fluid, and by administering any simple warm diluents.

When the mouth of the womb is considerably dilated, expulsive pains, sometimes termed *forcing* or bearing down pains, commence in the loins, and gradually proceed round the abdomen, till they meet at the region of the pubes, and dart down the *labia pudendi* and thighs. If the accoucheur's hand be placed on the flaccid sides of the abdomen, previous to the accession of a paroxysm of expulsive pain, before the woman is aware of it, the womb may be felt contracting to a hard, tense, incompressible tumor. These pains observe regular intervals of ease, which become shorter, whilst the pains, in an inverse ratio, increase in their duration and severity; and now it is that the abdominal muscles and diaphragm afford their assistance.

During each propulsive effort a larger portion of the membranes, distended with the liquor of the amnion, is forced through the mouth of the womb, performing to it, and all the parts through which the child is to pass, the office of an easy but powerful wedge. With these pains there is often a frequent disposition to empty the rectum; and sometimes this inclination is so harassing as to justify the administration of a small clyster, with half a drachm of the tincture of opium.

Vomiting is a common attendant on uterine pain, and is beneficial by rejecting food, which, from its quality or quantity, may be a source of irritation to the stomach. It principally occurs during the dilating pains, and unquestionably assists in the relaxation and dilatation of the mouth of the womb.

In a protracted labor, when vomiting continues or returns, after

the mouth of the womb is fully dilated, with abdominal tension and pain, without uterine contractions, and with ejection from the stomach of fluid like dark coffee-grounds, with foul tongue, and rapid and hard pulse, it generally must be taken as indicative of inflammatory action, and as requiring immediate and most efficient interference. Besides these attendants on parturition, the pulse usually becomes quickened and full; the countenance florid; the whole surface of the body covered with profuse perspiration; and the lower extremities cramped.

THE PROCESS OF NATURAL LABOR.—The process of natural labor, to use the words of a modern writer, is at once so simple and beautiful, that it cannot fail to excite the admiration of those who look beneath the surface of the operations of nature. Without repeating what has already been advanced respecting the precursory and accompanying symptoms of delivery, we shall merely recall to the mind those statements, as constituting a part of the history of this process. The symptoms which announce the commencement of natural labor have continued for an indefinite time; pains in the loins, darting through the pelvis, with an appearance of *shew*, indicate the approach of unequivocal evidences of this stage of parturition. From time to time these pains are of the *dilating* kind, and on an examination *per vaginam*, will be found to be diminishing the thickness of the cervix uteri more than to be opening the mouth of the womb. When the neck of the womb becomes reduced to the thickness of the other parts of that organ, it begins to open, and as soon as it can admit the extension of any part of the membranes distended with the liquor of the amnion, the pains rather assume the *expulsive* character, and there will be a sensible bearing down of the whole uterine tumor. Successive paroxysms of pain dilate the mouth of the womb more and more, whilst the protruded membranes, distended like a tense bladder, fill up the opening, and perform the office of an inimitable wedge, till the womb and the entrance to it form one continuous passage. Soon after this the membranes generally burst during a strong pain, having previously contributed to the dilatation of the vagina; and with the escape of the *waters*, or liquor of the amnion, there is sometimes a temporary suspension of pain, and the head of the child falls into the superior aperture or brim of the pelvis, or descends into the cavity; but more frequently this advance is not made until several pains have followed this occurrence.

The contractions of the womb recurring with augmented fre

quency and force, gradually propel the fœtus along the passages, until the head presses on the perinæum or fork, which is put on the full stretch : and also against the soft parts which it protrudes. These by degrees dilate, and permit the back part of the head to emerge under the arch of the pubes, and with the complete extrusion of the head, the other parts of the body are expelled, sometimes by the same pain, but more frequently by one which speedily follows.

The same paroxysm of pain that expels the child now and then detaches and expels the placenta, or after-burden, commonly so called ; but more frequently the womb remains at rest for about a quarter of an hour, when it resumes its contractions, and throws it off with the adherent membranes. This constitutes the interesting process of natural labor, in which the uterus requires no officious interference, but which, when forced to submit to any, she often resents by harassing the busy meddler with some untoward occurrence.

All that it becomes necessary for the accoucheur to do during this interesting process of natural labor, is to support the perinæum by his hand, covered smoothly with a soft napkin, and so applied as to give equable support, without in the slightest degree resisting the exit of the head. No other interference, in natural labor, is justifiable, and too strong terms cannot be employed to reprobate the practice of hastening the birth of the body, by dragging it forcibly by the head into the world. It should be left to be expelled by the unaided contraction of the uterus.

As soon as the child is thus brought into the world, and manifests unequivocal signs of life, the funis or navel-string must be tied, by passing a ligature, consisting of a few threads, or a thin piece of tape, round it, at about the distance of two inches from the navel, and a second at the distance of two inches from the first. The funis may then be divided by a round-pointed pair of scissors, at a point equidistant from each ligature, taking care to cut nothing but the funis. All this should be done in the most delicate manner under the bed-clothes, without exposing either the mother or child.

The navel-string being thus secured, and the child separated from the mother, it is to be transferred to the nurse, whilst the bandage, previously passed round the body of the mother, should be moderately tightened, or the womb supported by gentle pressure made by an assistant, which will be found very materially to aid its efforts to detach and expel the placenta.

MANAGEMENT OF THE AFTER-BURDEN.—The management of the placenta constitutes a very important part of natural labor ; and if the womb be not permitted to empty itself gradually, some untoward and alarming circumstance may occur in this stage of parturition. Generally from twenty to thirty minutes elapse between the birth and the expulsion of the placenta. The woman then complains of a slight pain in her back or abdomen, and this secondary contraction of the uterus detaches the placenta, although it but rarely expels it from the passages ; whence, however, it may usually be easily removed by coiling the funis round two of the fingers of the right hand, whilst guided by the cord, the thumb and index finger of the left hand should be passed up to its insertion into the placenta, which if it can be felt, is a pretty certain indication of the detachment of the whole mass from the sides of the womb. By this means, also, the navel-string is prevented from breaking off, and a firmer hold of the placenta is obtained.

To prevent the possibility of inverting the womb, or from its occurrence without knowing it, the placenta should be permitted to slip by the fingers of the left hand into the vagina ; and the withdrawing of the placental mass should always be in the axis of the brim, cavity, and outlet of the pelvis, as it passes those parts. The hand of the accoucheur should afterwards be laid on the abdomen, to ascertain that the uterus is well contracted : and the pulse should be felt, lest internal hemorrhage redistending the uterus may be going on to the endangering of the patient's life.

It is of great importance that a bandage be passed over the region of the womb : this being done, and a well-aired napkin applied to the labia pudendi, or external parts, some mild and cool nourishment may be given to the woman, who, after having been suffered to remain quiet for about half an hour, should have her soiled linen withdrawn, and, without being raised from her horizontal posture on any pretence, may be drawn up to the head of the bed ; whilst she herself remains perfectly passive, without taking any part in this operation, lest hemorrhage or prolapsus of the womb should follow.

TREATMENT AFTER DELIVERY.

“IT is customary with many nurses, to shift the patient completely, and, for this purpose, to raise her to an erect posture. Now

this practice may not always be followed by bad consequences, but it is very reprehensible ; for the patient is thus much fatigued, and if she sit up even for a short time, flooding or fainting may be produced. The pretext for this is generally to make the woman comfortable ; and, indeed, if the clothes be wet with perspiration or discharge, there may be some inducement to shift her. But this ought to be done slowly, without raising her, and if she have been fatigued, not until she have rested for a little. Another bad practice is, the administration of stimulants, such as brandy, wine, or cordial waters. I do not deny, that these, in certain cases of exhaustion, are salutary ; but I certainly maintain, that generally they are both unnecessary and hurtful, tending to prevent sleep, to promote hemorrhage, and excite fever. A third practice, no less injurious, is, keeping the room warm with a fire, drawing the bed-curtains close, increasing the bed-clothes, and giving every thing warm to promote perspiration. This is apt to produce debility, and many hysterical affections, as well as a troublesome species of fever, which it is often difficult to remove. It also renders the woman very susceptible of cold, and a shivering fit is very readily excited. Lastly, gossiping and noise of every kind, is hurtful, by preventing rest, occasioning head-ache or palpitation, as well as other bad symptoms. A stool should be procured within twenty-four or thirty-six hours after delivery, either by means of a clyster or gentle laxative. If the patient usually have the milk-fever smartly, or the breasts are disposed to be painful and tense, a mild dose of some saline laxative is better than a clyster.

After delivery, there is a discharge of sanguineous fluid from the uterus for some days, which then becomes greenish, and lastly pale, and decreases in quantity, disappearing altogether within a month, and often in a shorter time. This is called the lochial discharge, or, among females, "wasting." During this time it is necessary that the vagina and external parts be daily washed with tepid milk and water.

During the latter end of gestation, milk is generally secreted in a small quantity in the breasts, and sometimes it even runs from the nipples. After delivery the secretion increases, and about the third day the breasts will be found considerably distended. Many women, indeed, complain at this time of much tension and uneasiness, and there is usually some accumulation of the pulse. A pretty smart fever may even be induced, which is called the milk-fever. The best way to prevent these symptoms from becoming troublesome, is to keep the bowels open, and apply the child to the

breasts before they have become distended. This may generally be done twelve hours after delivery.

The diet of women in the puerperal state ought to be light; and if they are not to give suck, liquids should be avoided, the food must be of the dry kind, and thirst should be quenched, rather with fruit than with drink. If they are to nurse, the diet, for the first two days, should consist of tea and cold toasted bread for breakfast, beef or chicken soup for dinner, and panado for supper; toast water, or barley water, may be given for drink, but malt liquor should be avoided. Unless the patient be feeble, and at the same time have no fever, wine should not be allowed for the first two days; a little may then be added to the panado or sago, which is taken for supper; and a small glass, diluted with water, may be taken after dinner. A bit of chicken may be given for dinner, and in proportion as recovery goes on, the usual diet is to be returned to.

The time at which the patient should be allowed to rise a little, to have the bed made, must be regulated by her strength and other circumstances. It ought never to be earlier than the third day, and, in a day or two longer, she may be allowed to be dressed, and sit a little; but even in the best recovery, and during summer, the woman ought not to leave her room within a week. She ought not to go out for an airing, in general, till the third week. In cold weather, and when the patient is delicate, she must be longer confined. By rising too soon, and making exertion, a falling of the womb may be occasioned, and still more frequently the lochia are rendered profuse, and the strength impaired.”—*Burns*.

FLOODING.

“If flooding occur after delivery, the woman says there is surely an unusual discharge; and, on examining, it is found to be really so; but at first the pulse is pretty good, and the countenance is not much altered. In a minute, perhaps, the pulse sinks, the face becomes pale, the hands cold, the respiration is performed with a sigh, or after lying quiet for a little, a long sigh is fetched, and the patient seems as if trying to awake from a slumber. She exclaims she is sick, and immediately vomits, she throws out her arms, turns off the bed clothes, and seems anxious for breath; she complains

of cold, or perhaps is restless, and begs not to be disturbed; or lies in a state approaching to syncope, or gazes wildly around her, and is extremely restless, breathes with difficulty, and quickly expires. The danger of flooding is universally known, and the consternation excited by it, is in many cases great.

Flooding is to be prevented by preserving the action of the uterus, and avoiding whatever can increase the force of the circulation. A powerful means of keeping up the action of the womb, consists in preventing it from emptying itself too suddenly. It too frequently happens, when the child is instantaneously expelled by a single contraction, being in a manner projected from the uterus, or when the body is speedily pulled out, whenever the head is born, that hæmorrhage takes place; and, in a majority of instances, the uterus contracts on the placenta like an hour glass. Delivery then is not to be hurried, the steps of expulsion should be gradual; instead of pulling out the body of the child, we should rather retard the expulsion when it is likely to take place rapidly.

Another mean of exciting the uterine action, is by supporting the abdomen, and making gentle pressure on it with the hand immediately after delivery. I do not say that this practice is in every instance necessary, but it is so generally useful, that it never ought to be omitted. The circulation is also to be moderated by the free admission of cool air, by lessening the quantity of bed-clothes, by a state of perfect rest, and by avoiding the exhibition of stimulants. If these directions, which are few and simple, be attended to, we shall seldom meet with hæmorrhage after the delivery of the child.

The instant a woman is seized with hæmorrhage after delivery, we ought to take steps for exciting the contraction of the uterus, upon which alone we place our hopes of safety. Two very powerful means are at all times within our reach. The application of cold, and the introduction of the hand into the cavity of the uterus.

When we introduce the hand, we conduct it to the placenta, using the cord only as a director. We do not attempt to bring it away, but press upon it with the back of the hand, to excite the uterus to separate it; or, if it be already detached, and lying loose in the cavity of the womb, we move the hand gently to stimulate the uterus, but neither withdraw it, nor extract the placenta, until we feel the womb contracting.

The contraction of the uterus will be powerfully assisted by the application of cold. The quantity of clothes should be les-

sened; but our principal object is to apply cold as a topical remedy. Cloths dipped in cold water should be laid suddenly upon the belly, or cold water may be thrown upon it. In obstinate cases, it has been found useful to project it forcibly with a syringe, or to throw it up into the uterus itself. If we have not a syringe at hand, we may in desperate cases, dip a sponge or piece of cloth in cold water, and carry it in the hollow of the hand to the upper part of the uterus. Nay, ice itself, has, with happy effects, been introduced into the womb. In general, however, the external application of cold will be sufficient to save the patient. I feel confident in advising it, and can say without reserve, that I have never known any bad consequence result from it.

In those cases where great weakness has been produced, we must not only endeavor to excite the uterine contraction in order to prevent further injury, but we must also husband well the power which remains. The hand is to be immediately introduced into the womb, and must be kept there, moving it gently, until the fibres contract; and until this take place, neither the hand nor the placenta should be withdrawn. Cold water is to be dashed upon the abdomen, gentle pressure is to be made by the hand on the region of the uterus, and the whole belly firmly supported with a bandage, provided that can be applied without moving the patient much. But as every exertion is dangerous, motion must be avoided; and upon no account is the patient to be shifted or disturbed for some time. By imprudent attempts to raise the patient, or "to make her more comfortable," she has sometimes suddenly expired.

Cordials, as, for instance, Madeira, diluted or pure, should be given in small doses regularly for some time to support the strength; but after recovery begins to take place, and the pulse steadily to be felt, they should be omitted or decreased; for if persisted in to the same extent, fever or inflammation may be excited. Opiates are of greater service in all cases of flooding after delivery. They are among the safest and best cordials we can employ, and must in every instance be exhibited. The dose ought to be proportioned to the urgency, varying from fifty to sixty drops. In some instances when the debility was great, a hundred drops of laudanum, or five grains of solid opium, have been given at once, and afterwards three grains every three hours till the patient was out of danger. Nor does this practice, against which I was at first prejudiced from theory, ever prevent the contraction of the uterus, or produce afterwards any bad effect. Opiates supply the place of wine, and are infinitely safer."—*Burns*.

AFTER-PAINS.

“ALMOST every woman, with the exception perhaps of the first child, is tormented with what are called “after-pains.” These pains, by the old women, are considered useful, because they are almost always accompanied by the discharge of coagula, which they say must come away, and on this account they oftentimes refuse to give any thing for their relief. But this doctrine, were it strictly acted upon, would subject the patient to most unnecessary tortures, sometimes for many days together. I have ever regarded after-pains as an evil of magnitude, and always endeavored to prevent them as quickly as possible. They interrupt sleep, which is at this time of especial importance to the exhausted woman, as well as needlessly excruciate the body.

I generally prescribe camphor for their relief, and in the following form :—

Take	Camphor, two drachms.
	Alcohol, enough to reduce the camphor to powder
	Gum Arabic, three drachms.
	White sugar, three drachms.
	Water, six ounces.

Of this, a tablespoonful is given every hour or two, or oftener, until the pains cease—or, I sometimes give ten grains of this substance finely powdered, every hour or two, mixed in a little syrup of any kind; this appears to answer nearly as well as the julep just mentioned.

Should the camphor fail to give relief, or constitutional peculiarity render it improper, we must give the opium; provided, there be no circumstance of the system, as fever, which would make it inadmissible. I have in a few instances, been obliged to let blood, from the high action of the arterial system, before I could venture upon the use of opium; but these cases are rare, though of high consequence to be well understood in practice. I have, however, given the camphor, where I dared not venture upon the opium; and this is important to know, as preparatory bleeding always excites alarm.”—*Dewees*.

STRANGURY.

“AFTER SEVERE labor, the neck of the bladder and urethra are sometimes extremely sensible; and the whole of the external parts are tender, and of a deep red color. This is productive of very distressing strangury, which is occasionally accompanied with a considerable degree of fever. It is long of being removed, but yields at last to a course of gentle laxatives, opiates, and fomentations. Anodyne clysters are of service.”—*Burns*.

EPHEMERAL FEVER, OR WEED.

“THE ephemera, or weed, as it has been called, is a fever usually of short duration; the paroxysm being completed generally within twenty-four, and always within forty-eight hours; for if it continue longer, it becomes a fever of a different description. It proceeds from great susceptibility of the nervous system, by which slight exposure to cold, mental agitation, or similar causes, excite a universal disorder of the frame. It consists of a cold, a hot, and a sweating stage; but if care be not taken, the paroxysm is apt to return; and we have either a distinct intermitting fever established, or sometimes, from the co-operation of additional causes, a continued, and very troublesome fever is produced.

In the cold stage, we give small quantities of warm fluid, and apply a bladder filled with warm water to the stomach, or a warm flannel to the back, on the commencement of the chillness; or, if the patient be sick, and have a foul tongue, a gentle emetic of ipecac. will be useful. Having hastened on the hot stage, we lessen very cautiously the number of the bed-clothes, and give saline julep with diluents, to bring on the sweating stage. When this is done, we are careful not to encourage perspiration too much, which increases the weakness, or brings out a miliary eruption, and renders the disease more obstinate. On the other hand, if the perspiration be too soon checked, the fever continues, or recurs more severely; a gentle sweat may be kept up for five or six hours by tepid fluids. Then we refrain from them; and when the process is over, the patient is to be cautiously shifted, the clothes being previously warmed. After the fit, if the patient is exhausted, a little wine may be given. In the whole paroxysm, we must watch against the sud-

den application of cold, which, in the two last stages, renews the shivering. When the fits recur, we may sometimes check them, by giving an opiate an hour before the expected time of accession, and applying warmth to the back and stomach the moment the chillness is felt. It is of great consequence to keep the bowels open, by aloes combined with calomel, &c.”—*Burns*.

MILK FEVER.

“THE secretion of the milk is usually ushered in with a slight degree of fever, or, at least, a frequency of the pulse. But sometimes it is attended with a smart febrile fit, preceded with shivering, and going off with a perspiration. This attack, if properly managed, seldom continues for twenty-four hours; and during this time, the breasts are full, hard, and painful, which distinguishes this from more dangerous fevers. Sometimes, during the hot fit, there is a slight delirium. A smart purge generally cures this disease; and is often used, in plethoric habits, on the third day after delivery, to prevent it. Mild diaphoretics, during the hot stage, are also proper. Applying the child early to the breast is a mean of prevention.”—*Burns*.

INFLAMMATION OF THE WOMB.

“THIS disease usually begins about the third or fifth day after delivery, but it may take place at a later period. It is pointed out by a pain in the lower part of the belly, which gradually increases in violence, and continues without intermission, though it is subject to occasional aggravations. The uterine region is very painful when it is pressed, and it is a little swelled. The lochial discharge is very early suppressed, and the secretion of milk diminished or destroyed. Nearly about the same time that the local symptoms appear, the system becomes affected. The patient shivers, has head-ache, is often sick, and vomits bilious or dark-colored fluid. The pulse very early becomes frequent, and somewhat hard, and the skin is felt to be hot. The tongue is white and dry, the urine high-colored and turbid, and if the bladder be affected, it may be suppressed. The vomiting in some cases continues, and

the bowels are at first bound, but afterwards the stools are passed more frequently.

This disease calls for the early use of the lancet, which is the principal remedy; and the quantity of blood which we take away, and the repetition of the evacuation, must depend on the constitution of the patient, the effects produced, and the period of the disease. If two or three days have passed over, the pulse may be full and frequent; but this is an indication that suppuration is going on, which will be ascertained by throbbing pains, &c. In this case, the lancet is hurtful, dried laxatives are also highly proper. Fomentations, sinapisms, and embrocations, are useful. Diaphoretics ought to be administered, such as the saline julep, with the addition of antimonial wine and laudanum. This is the best internal remedy I think we can employ. Emollient clysters, or sometimes anodyne clysters give relief. In the suppurative stage, we must keep the bowels open, give light nourishment, apply fomentations, and allay pain with anodynes. When the matter is discharged, a removal to the country will be useful, and tonic medicines should be given.”—*Burns*.

PUERPERAL, OR CHILD-BED FEVER.

“In general, patients do very well after delivery; but now and then a frightful mortality occurs among lying-in-women, the cause of which is the puerperal, or child-bed fever.

This disease sometimes commences and proceeds very insidiously; some of the most conspicuous symptoms, as vomiting, heat of skin, &c., being absent. In general, it begins about the second, third, or fourth day after delivery. The common symptoms are, rigors, succeeded by heat of skin; a full, hard, rapid pulse; occasional vomitings; distress of countenance; great debility, and a suppression of the secretion of milk: there is permanent pain and tenderness in some part of the abdomen, most frequently about the umbilicus, which is so much increased by pressure, that even the approach of your hand makes the woman shrink. The disease consists of peritoneal inflammation, with continued fever. The acute stage continues from one to two or three days; during this time the rigors are severe; the skin very hot, though at some periods clammy; the pulse quick and full; the

belly tumid; and susceptible of great pain from the slightest pressure; the tongue is white; the respiration short and quick, and the countenance anxious: these are the signs of abdominal inflammation, and this stage of the disease is often a fatal one. After these symptoms have continued about forty-eight hours, or at most three days, the pain is somewhat diminished; but the belly is more tumid, the pulse becomes smaller, and more rapid, beating from 130 or 140 to 150 in a minute; the lips are pallid, the countenance sunk, the breathing is still quick, and the woman lies constantly on her back. In about five or six days from the commencement of the disease the third stage begins; the countenance is then still more sunk and pallid; the breathing more hurried, the pulse quicker and more feeble; the pain in the abdomen is less, but its walls are distended like a drum; the woman moves restlessly about the bed: her mind becomes affected; there is delirium, which, however, is not constant, and presently she dies. The progress of this disease is sometimes so rapid as to be fatal in less than forty-eight hours.

The pain in the abdomen, in puerperal fever, though it may vary in its degree, is constant; it is increased by pressure, and accompanied by fever; these circumstances will distinguish it from after-pains, between which there is an interval, and during which there is neither fever nor tenderness of the abdomen on slight pressure.

It is a severe inflammatory disease, and will bear depletion, which must be employed early and boldly, whether in its sporadic or infectious form; and the more I see of it, the more I am convinced of the propriety of the maxim, "hit hard, but hit early." Lose no time in the vigorous employment of depleting measures, for the acute stage will often pass away in twenty-four hours, nay, if violent at its commencement, in twelve hours, when the patient is beyond the reach of art: generally speaking, in twenty-four hours the time for *active* depletion is over. As soon as the rigors have ceased, and the hot stage has commenced, if the patient is robust, immediately take away from twenty to thirty ounces of blood from the arm; it is important that this should flow in a full stream; let the orifice therefore be large, and not like the prick of a pin. It is desirable that the bleeding should produce fainting; if, therefore, the patient does not faint when sixteen ounces have been extracted, set her upright in bed, and if she then faints, do not attempt to rouse her, but allow the fainting to continue: on her recovery, you will probably find that the pain and all the pre-

vious symptoms have ceased. Leeches, succeeded by hot fomentations, or poultices over the abdomen, and often repeated, will now be of considerable benefit by unloading the minute vessels of the part.

The next important object is to excite free and copious purging, which will be effectually done by giving twenty grains of calomel, followed in two or three hours by two or three drachms of castor oil, either alone, or in combination with spirits of turpentine; and this may be repeated as often as necessary, until free purging is induced. Dr. Armstrong begins with half a drachm of calomel. If in six or eight hours, the symptoms should increase, you must bleed again to the amount of sixteen or twenty ounces, or in proportion to the severity of the disease. The patient must be seen a few hours after the first bleeding; for although after fainting the pain and other symptoms appear to cease, yet on the renewal of the circulation they may return with perhaps their previous severity. By the early employment of these vigorous measures, the disease will in general be subdued in a few hours, and the fate of your patient is determined. After another interval of six or eight hours depletion by general bleeding is seldom proper; but if a third bleeding is indicated by the state of the pulse, tenderness, &c. of the abdomen, let it be a cautious one. Foment the bowels frequently, or cover the abdomen with a bag of scalded bran, which is light, and retains the heat; this is to be renewed as often as may be necessary. Calomel, as an anti-inflammatory remedy, has a powerful influence over many acute diseases; it has a specific influence in croup, inflammation of the liver, &c.; and it is said to have as specific an effect in puerperal fever. It should be given in five grain doses every four hours, until it produces its specific action on the system. Should violent purging or griping come on during the employment of calomel, small doses of opium, or Dover's Powders, may be combined with it, or given at intermediate periods. When the system becomes under the peculiar influence of mercury, the symptoms speedily subside, and the recovery of the patient is rendered much more probable; the remedy is now to be withdrawn, or repeated in smaller doses, and at longer intervals; mild aperients are now to be regularly employed.

Active purging is in all cases as essential as bleeding.— If the symptoms of this disease are connected with a loaded state of the bowels, the chief point is to empty them; but although this moderate form of the disease may yield immediately to purging and warm fomentations, yet if it threatens any considerable degree of

violence or danger, it is best at once to adopt those vigorous measures just recommended, which will alone be sufficient to resist it."—*Gooch*.

INFLAMMATION OF THE BREASTS.

"THIS disease is easily known by the pain, hardness, and swelling which accompany it. In some cases, the whole breast appears to be affected, in others, only one side, and in some the affection is small and superficial.

When the breast inflames, it is evident that the retention of the milk must, for a time at least, increase the pain.

The first object then should be to have the breasts drawn, either by the child or some other means; but, should the milk not come away readily, and the pain be increased thereby, farther attempts must not be made; otherwise both the disease and sufferings of the woman may be aggravated. A cooling diet and an open state of the bowels are necessary while the swelling continues. And it is better for the patient to remain in bed, as the weight of the breast, while in the erect posture, often increases the inflammation. The breast should be gently rubbed with a small quantity of sweet oil, or unsalted butter, and poultices of crumb of bread and lead water applied. If the pain and hardness do not very soon go off by this application, warm emollient poultices, as milk and bread, with a little oil, or united with the leaves of the thorn apple, must be had recourse to. These poultices will not promote suppuration unless the inflammation has proceeded so far, that the process has already begun, and in this case, the sooner it is produced the better.

If the abscess do not point and break soon, no good can be gained by delay; an opening should therefore be made, so as to evacuate the matter freely. This not only gives immediate relief, but prevents a farther extension of the mischief. The milk and bread or flax-seed poultices must be continued for a few days, in order to remove the hardness, and then the part must be dressed, as in ordinary cases. (See *Abscess*.)

Indurations remaining after an abscess, may be frequently remedied by the application of a mercurial plaster, or cloths wet with the camphorated spirit, or rubbing the part, night and morning, with mercurial ointment, united with a little camphor.

Sometimes after the abscess heals, and the breast seems to be cured, it swells a little, especially towards night. This is from weakness, and is cured by strengthening the constitution.” (*Ewell.*)

INVERSION OF THE WOMB.

“THERE are two degrees of the inversion of the womb, namely, the partial and complete. The former, which is the more ordinary one, appears in the shape of a swelling as large as a child’s head, protruded without the passages immediately after expulsion of the after-birth, accompanied with violent forcing and bearing-down pains, and followed by flooding, faintings, and urgent fruitless attempts to make water. This arises from a part, more or less, of that portion of the womb, which had extended, previously to delivery, above the bones of the basin, being turned inside out.

The other degree is so complete an inversion of the womb, that it is torn away from its attachments to the sides of the basin, the immediate consequence of which is instant death.

Such accidents can only arise from rash and ill-directed endeavors to extract the after-birth, by drawing down the navel-string before it can be completely separated. But whatever be the cause, the part must be immediately restored, or the consequence will soon prove fatal; for its orifice will contract in this unnatural state, and so prevent the needful relief. Therefore, without delay, place the patient on her back, with her hips raised, and gently return the uterus into the vagina with three fingers, and then with the whole hand place it in its natural position; after which, clench the fist, and retain it there until the uterus contract upon it; lastly, apply the bandages as advised in the case of falling of the womb, and direct the patient to remain in bed some days.”—(*Ewell.*)

THE MORAL AND PHYSICAL MANAGEMENT OF CHILDREN.

It is during infancy that the foundation of a good or bad constitution is generally laid; it is therefore of importance that parents should be well acquainted with the various causes which may injure the health of their offspring.

It appears from the annual registers of the dead, that almost one half of the children born in Great Britain die under twelve years of age. To many, indeed, this may appear a natural evil; but on due examination it will be found to be one of our own creating. Were the death of infants a natural evil, other animals would be as liable to die young as man; but this we find is by no means the case.

It may seem strange that man, notwithstanding his superior reason, should fall so far short of other animals in the management of his young; but our surprise will soon cease, if we consider that brutes, guided by instinct, never err in this respect; while man, trusting solely to art, is seldom right. Were a catalogue of those infants who perish annually by art alone exhibited to public view, it would astonish most people.

If parents are above taking care of their children, others must be employed for that purpose; these will always endeavor to recommend themselves by the appearance of extraordinary skill and address. By this means such a number of unnecessary and destructive articles have been introduced into the diet, clothing, &c. of infants, that it is no wonder so many of them perish.

Nothing can be more preposterous than a mother who thinks it below her to take care of her own child, or who is so ignorant as not to know what is proper to be done for it. If we search nature throughout, we cannot find a parallel to this. Every other animal is the nurse of its own offspring, and they thrive accordingly. Were the brutes to bring up their young by proxy they would share the same fate with those of the human species.

We mean not, however, to impose it as a task upon every mother to suckle her own child. This, whatever speculative writers may allege, is in some cases impracticable, and would inevitably prove destructive both to the mother and child. Women of delicate constitutions, subject to hysteric fits, or other nervous affections, make very bad nurses;* and these complaints are now so common, that it is rare to find a woman of fashion free from them; such women, therefore, supposing them willing, are often unable to suckle their own children.

Almost every mother would be in a condition to give suck, did mankind live agreeably to nature; but whoever considers how far many mothers deviate from her dictates, will not be surprised to find some of them unable to perform that necessary office. Moth-

* I have known an hysteric woman kill her child by being seized with a fit in the night.

ers who do not eat a sufficient quantity of solid food, nor enjoy the benefit of free air and exercise, can neither have wholesome juices themselves, nor afford proper nourishment to an infant. Hence children who are suckled by delicate women either die young, or continue weak and sickly all their lives.

When we say that mothers are not always in a condition to suckle their own children, we would not be understood as discouraging that practice. Every mother who can, ought certainly to perform so tender and agreeable an office.* But suppose it to be out of her power, she may, nevertheless, be of great service to her child. The business of nursing is by no means confined to giving suck. To a woman who abounds with milk, this is the easiest part of it. Numberless other offices are necessary for a child, which the mother ought at least to see done.

A mother who abandons the fruit of her womb as soon as it is born to the sole care of an hireling hardly deserves that name. A child, by being brought up under the mother's eye, not only secures her affection, but may reap all the advantages of a parent's care though it be suckled by another. How can a mother be better employed than in superintending the nursery? This is at once the most delightful and important office; yet the most trivial business or insipid amusements are often preferred to it! A strong proof both of the bad taste and wrong education of modern females.

It is indeed to be regretted that more care is not bestowed in teaching the proper management of children to those whom nature has designed for mothers. This, instead of being made the principal, is seldom considered as any part of female education. Is it any wonder, when females so educated come to be mothers, that they should be quite ignorant of the duties belonging to that character? However strange it may appear, it is certainly true, that many mothers, and those of fashion, too, are as ignorant, when they have brought a child into the world, of what is to be done for it, as the infant itself. Indeed the most ignorant of the sex are

* Many advantages would arise to society, as well as to individuals, from mothers suckling their own children. It would prevent the temptation which poor women are laid under of abandoning their children to suckle those of the rich for the sake of gain; by which means society loses many of its most useful members, and mothers become in some sense the murderers of their own offspring. I am sure I speak within the truth when I say, that not one in twenty of those children live who are thus abandoned by their mothers. For this reason no mother should be allowed to suckle another's child till her own is either dead or fit to be weaned. A regulation of this kind would save many lives among the poorer sort, and could do no hurt to the rich, as most women who make good nurses are able to suckle two children in succession upon the same milk.

generally reckoned most knowing in the business of nursing. Hence, sensible people become the dupes of ignorance and superstition; and the nursing of children instead of being conducted by reason, is the result of whim and caprice.*

Were the time that is generally spent by females in the acquisition of trifling accomplishments employed in learning how to bring up their children; how to dress them so as not to hurt, cramp, or confine their motions; how to feed them with wholesome and nourishing food; how to exercise their tender bodies, so as best to promote their growth and strength: were these made the objects of female instruction, mankind would derive the greatest advantages from it. But while the education of females implies little more than what relates to dress and public show, we have nothing to expect from them but ignorance even in the most important concerns.

Did mothers reflect on their own importance and lay it to heart, they would embrace every opportunity of informing themselves of the duties which they owe to their infant offspring. It is their province not only to form the body, but also to give the mind its most early bias. They have it very much in their power to make men healthy or valetudinary, useful in life or the pests of society.

But the mother is not the only person concerned in the management of children. The father has an equal interest in their welfare, and ought to assist in every thing that respects either the improvement of the body or mind.

It is a pity that the men should be so inattentive to this matter. Their negligence is one reason why females know so little of it. Women will ever be desirous to excel in such accomplishments as recommend them to the other sex. But men generally keep at such a distance from even the smallest acquaintance with the affairs of the nursery, that many would reckon it an affront were they supposed to know any thing of them. Not so, however, with the kennel or the stables! A gentleman of the first rank is not ashamed to give directions concerning the management of his dogs or horses, yet would blush were he surprised in performing the same office for that being who derived its existence from himself,

* Tacitus, the celebrated Roman historian, complains greatly of the degeneracy of the Roman ladies in his time with regard to the care of their offspring. He says, that in former times the greatest women in Rome used to account it their chief glory to keep the house and attend their children; but that now the young infant was committed to the sole care of some poor Grecian wench, or other menial servant. We are afraid, wherever luxury and effeminacy prevail, there will be too much ground for this complaint.

who is the heir of his fortunes, and the future hope of his country!

Nor have physicians themselves been sufficiently attentive to the management of children. This has been generally considered as the sole province of old women, while men of the first character in physic have refused to visit infants even when sick. Such conduct in the faculty has not only caused this branch of medicine to be neglected, but has also encouraged the other sex to assume an absolute title to prescribe for children in the most dangerous diseases. The consequence is, that a physician is seldom called till the good women have exhausted all their skill; when his attendance can only serve to divide the blame, and appease the disconsolate parents.

Nurses should do all in their power to prevent diseases; but when a child is taken ill, some person of skill ought immediately to be consulted. The diseases of children are generally acute, and the least delay is dangerous.

Were physicians more attentive to the diseases of infants, they would not only be better qualified to treat them properly when sick, but likewise to give useful directions for their management when well. The diseases of children are by no means so difficult to be understood as many imagine. It is true, children cannot tell their complaints; but the causes of them may be pretty certainly discovered by observing the symptoms, and putting proper questions to the nurses. Besides, the diseases of infants, being less complicated, are easier cured than those of adults.*

It is really astonishing that so little attention should in general be paid to the preservation of infants. What labour and expense are daily bestowed to prop an old tottering carcass for a few years, while thousands of those who might be useful in life perish without being regarded! Mankind are too apt to value things according to their present, not their future usefulness. Though this is of all others the most erroneous method of estimation, yet upon no other principle is it possible to account for the general indifference with respect to the death of infants.

OF DISEASED PARENTS.—One great source of the diseases of children is the unhealthiness of parents. It would be as reasonable to expect a rich crop from a barren soil, as that strong and

* The common opinion, that the diseases of infants are hard to discover and difficult to cure, has deterred many physicians, from paying that attention to them which they deserve. I can, however, from experience declare, that this opinion is without foundation; and that the diseases of infants are neither so difficult to discover nor so ill to cure as those of adults.

healthy children should be born of parents whose constitutions have been worn out with intemperance or disease.

An ingenious writer* observes, that on the constitution of mothers depends originally that of their offspring. No one who believes this will be surprised, on a view of the female world, to find diseases and death so frequent among children. A delicate female, brought up within doors, an utter stranger to exercise and open air, who lives on tea and other slops, may bring a child into the world, but it will hardly be fit to live. The first blast of disease will nip the tender plant in the bud; or should it struggle through a few years' existence, its feeble frame, shaken with convulsions from every trivial cause, will be unable to perform the common functions of life, and prove a burden to society.

If to the delicacy of mothers we add the irregular lives of fathers, we shall see farther cause to believe that children are often hurt by the constitution of their parents. A sickly frame may be originally induced by hardships or intemperance, but chiefly by the latter. It is impossible that a course of vice shall not spoil the best constitution; and, did the evil terminate here, it would be a just punishment for the folly of the sufferer: but when once a disease is contracted and riveted in the habit, it is entailed on posterity. What a dreadful inheritance is the gout, the scurvy, or the king's evil, to transmit to our offspring! How happy had it been for the heir of many a great estate had he been born a beggar, rather than to inherit his father's fortunes at the expense of inheriting his diseases.

A person laboring under any incurable malady ought not to marry. He thereby not only shortens his own life but transmits misery to others; but when both parties are deeply tainted with the scrofula, the scurvy, or the like, the effects must be still worse. If such have any issue they must be miserable indeed. Want of attention to these things in forming connections for life has rooted out more families than plague, famine, or the sword; and as long as these connections are formed from mercenary views the evil will be continued.†

In our matrimonial contracts, it is amazing so little regard is had to the health and form of the object. Our sportsmen know that the generous courser cannot be bred out of the foundered jade, nor

* Rousseau.

† The Lacedemonians condemned their king, Archidamus, for having married a weak puny woman; because, said they, instead of propagating a race of heroes, you will fill the throne with a progeny of changelings.

the sagacious spaniel out of the snarling cur. This is settled upon immutable laws. The man who marries a woman of a sickly constitution, and descended of unhealthy parents, whatever his views may be, cannot be said to act a prudent part. A diseased woman may prove fertile; should this be the case, the family must become an infirmary: what prospect of happiness the father of such a family has, we shall leave any one to judge.*

Such children as have the misfortune to be born of diseased parents will require to be nursed with greater care than others. This is the only way to make amends for the defects of constitution; and it will often go a great length. A healthy nurse, wholesome air, and sufficient exercise, will do wonders. But when these are neglected, little is to be expected from any other quarter. The defects of constitution cannot be supplied by medicine.

Those who inherit any family-disease ought to be very circumspect in their manner of living. They should consider well the nature of such disease, and guard against it by a proper regimen. It is certain, that family diseases have often, by proper care, been kept off for one generation; and there is reason to believe, that, by persisting in the same course, such diseases might at length be wholly eradicated. This is a subject very little regarded, though of the greatest importance. Family-constitutions are as capable of improvement as family-estates; and the libertine who impairs the one does greater injury to his posterity than the prodigal who squanders the other.

CLOTHING OF CHILDREN.—The clothing of an infant is so simple a matter, that it is surprising how any person should err in it; yet many children lose their lives, and others are deformed by inattention to this article.

Nature knows of no use of clothes to an infant, but to keep it warm. All that is necessary for this purpose is to wrap it in a soft loose covering. Were a mother left to the dictates of nature alone, she would certainly pursue this course. But the business of dressing an infant has long been out of the hands of mothers, and has at last become a secret which none but adepts pretend to understand.

From the most early ages it has been thought necessary, that a

* The Jews, by their laws, were, in certain cases, forbid to have any manner of commerce with the diseased; and, to this all wise legislators ought to have a special regard. In some countries diseased persons have actually been forbid to marry. This is an evil of a complicated kind, a natural deformity, and a political mischief; and therefore requires a public consideration.

woman in labor should have some person to attend her. This in time became a business; and, as in all others, those who were employed in it strove to outdo one another in the different branches of their profession. The dressing of a child came of course to be considered as the midwife's province; who, no doubt, imagined, that the more dexterity she could show in this article the more her skill should be admired. Her attempts were seconded by the vanity of parents, who, too often desirous of making a show of the infant as soon as it was born, were ambitious to have as much finery heaped upon it as possible. Thus it came to be thought as necessary for a midwife to excel in bracing and dressing an infant as for a surgeon to be expert in applying bandages to a broken limb; and the poor child, as soon as it came into the world, had as many rollers and wrappers applied to its body as if every bone had been fractured in the birth; while these were often so tight, as not only to gall and wound its tender frame, but even to obstruct the motion of the heart, lungs, and other organs necessary to life.

In most parts of Britain, the practice of rolling children with so many bandages is now, in some measure, laid aside; but it would still be a difficult task to persuade the generality of mankind that the shape of an infant does not entirely depend on the care of the midwife. So far, however, are all her endeavors to mend the shape from being successful, that they constantly operate the contrary way; and mankind become deformed in proportion to the means used to prevent it. How little deformity of body is to be found among uncivilized nations! So little, indeed, that it is vulgarly believed they put all their deformed children to death. The truth is, they hardly know such a thing as a deformed child. Neither should we, if we followed their example. Savage nations never think of managing their children. They allow them the full use of every organ, carry them abroad in the open air, wash their bodies daily in cold water, &c. By this management their children become so strong and hardy, that by the time our puny infants get out of the nurse's arms, theirs are able to shift for themselves.*

Among brute animals, no art is necessary to procure a fine shape. Though many of them are extremely delicate when they come into the world, yet we never find them grow crooked for

* A friend of mine, who was several years on the coast of Africa, tells me, that the natives neither put any clothes upon their children, nor apply to their body bandages of any kind, but lay them on a pallet, and suffer them to tumble about at pleasure; yet they are all straight, and seldom have any disease.

want of swaddling-bands. Is nature less generous to the human kind? No: but we take the business out of nature's hands.

Not only the analogy of other animals, but the very feelings of infants tell us, they ought to be kept easy and free from pressure. They cannot, indeed, tell their complaints, but they can show signs of pain; and this they never fail to do by crying when hurt by their clothes. No sooner are they freed from their bracings than they seem pleased and happy; yet, strange infatuation! the moment they hold their peace they are again committed to their chains.

If we consider the body of an infant as a bundle of soft pipes, replenished with fluids in continual motion, the danger of pressure will appear in the strongest light. Nature, in order to make way for the growth of the children, has formed their bodies soft and flexible; and lest they should receive any injury from pressure in the womb, has surrounded the *fœtus* everywhere with fluids. This shows the care which nature takes to prevent all unequal pressure on the bodies of infants, and to defend them against every thing that might in the least cramp or confine their motions.

Even the bones of an infant are so soft and cartilaginous that they readily yield to the slightest pressure, and easily assume a bad shape, which can never after be remedied. Hence it is that so many people appear with high-shoulders, crooked-spines, and flat breasts, who were as well-proportioned at their births as others, but who had the misfortune to be squeezed out of shape by the application of stays and bandages.

Pressure by obstructing the circulation, likewise prevents the equal distribution of nourishment to the different parts of the body, by which means the growth becomes unequal. One part grows too large, while another remains too small; and thus in time the whole frame becomes disproportioned and misshapen. To this we must add, that when a child is cramped in its clothes it naturally shrinks from the part that is hurt; and by putting its body into unnatural postures, it becomes deformed by habit.

Deformity of body may, indeed, proceed from weakness or disease; but, in general, it is the effect of improper clothing. Ninetenths, at least, of the deformity among mankind must be imputed to this cause. A deformed body is not only disagreeable to the eye, but by a bad figure both the animal and vital functions must be impeded, and of course health impaired. Hence few people remarkably misshapen are strong or healthy.

The new motions which commence at the birth, as the circula-

tion of the whole mass of blood through the lungs, respiration, the peristaltic motion, &c., afford another strong argument for keeping the body of an infant free from all pressure. These organs, not having been accustomed to move, are easily stopped; but when this happens, death must ensue. Hardly any method could be devised more effectually to stop these motions than bracing the body too tight with rollers* and bandages. Were these to be applied in the same manner to the body of an adult for an equal length of time, they would hardly fail to hurt the digestion and make him sick. How much more hurtful they must prove to the tender bodies of infants, we shall leave any one to judge.

Whoever considers these things will not be surprised that so many children die of convulsions soon after the birth. These fits are generally attributed to some inward cause; but in fact they oftener proceed from our own imprudent conduct. I have known a child seized with convulsion-fits soon after the midwife had done swaddling it, who, upon taking off the rollers and bandages, was immediately relieved, and never had the disease afterwards. Numerous examples of this might be given were they necessary.

It would be safer to fasten the clothes of an infant with strings than pins, as they often gall and irritate their tender skins, and occasion disorders. Pins have been found sticking above half an inch into the body of a child after it had died of convulsion-fits, which in all probability proceeded from that cause.

Children are not only hurt by the tightness of their clothes, but also by the quantity. Every child has some degree of fever after the birth; and if it be loaded with too many clothes the fever must be increased. But this is not all; the child is generally laid in bed with the mother, who is often likewise feverish; to which we may add the heat of the bed-chamber, the wines and other heating things too frequently given to children immediately after birth. When all these are combined, which does not seldom happen, they must increase the fever to such a degree as will endanger the life of the infant.

The danger of keeping infants too hot will further appear, if we consider that, after they have been for some time in the situation mentioned above, they are often sent into the country to be nursed in a cold house. Is it any wonder if a child, from such a transition, catches a mortal cold, or contracts some other fatal disease?

* This is by no means inveighing against a thing that does not happen. In many parts of Britain at this day, a roller, eight or ten feet in length, is applied tightly round the child's body as soon as it is born.

When an infant is kept too hot, its lungs, not being sufficiently expanded, are apt to remain weak and flaccid for life; hence proceed coughs, consumptions, and other diseases of the breast.

It would answer little purpose to specify the particular species of dress proper for an infant. These will always vary in different countries, according to custom and the humor of parents. The great rule to be observed is, *That a child have no more clothes than are necessary to keep it warm, and that they be quite easy for its body.*

Stays are the very bane of infants. A volume would not suffice to point out all the bad effects of this ridiculous piece of dress, both on children and adults. The madness in favor of stays, seems, however, to be somewhat abated; and it is to be hoped the world will, in time, become wise enough to know, that the human shape does not solely depend upon whalebone and bend leather.*

I shall only add with respect to the clothes of children, that they ought to be kept thoroughly clean. Children perspire more than adults, and if their clothes be not frequently changed, they become very hurtful. Dirty clothes not only gall and fret the tender skins of infants, but likewise occasion ill smells, and, what is worse, tend to produce vermin and cutaneous diseases.

Cleanliness is not only agreeable to the eye, but tends greatly to preserve the health of children. It promotes the perspiration, and, by that means, frees the body from superfluous humors, which, if retained, could not fail to occasion diseases. No mother or nurse can have any excuse for allowing a child to be dirty. Poverty may oblige her to give it coarse clothes; but if she does not keep them clean, it must be her own fault.

OF THE FOOD OF CHILDREN.—Nature not only points out the food proper for an infant, but actually prepares it. This, however, is not sufficient to prevent some who think themselves wiser than nature from attempting to bring up their children without her provision. Nothing can show the disposition which mankind have to depart from nature more than their endeavoring to bring up chil-

* Stays, made of bend leather, are worn by all the women of lower station in many parts of England.

I am sorry to understand, that there are still mothers mad enough to lace their daughters very tight in order to improve their shape. As reasoning would be totally lost upon such people, I shall beg leave just to ask them, why there are ten deformed women for one man? and likewise to recommend to their perusal a short moral precept, which forbids us to *deform the human body.*

dren without the breast. The mother's milk, or that of a healthy nurse, is unquestionably the best food for an infant. Neither art nor nature can afford a proper substitute for it. Children may seem to thrive for a few months without the breast; but when teething, the small-pox, and other diseases incident to childhood come on, they generally perish.

A child, soon after the birth, shows an inclination to suck; and there is no reason why it should not be gratified. It is true, the mother's milk does not always come immediately after the birth; but this is the way to bring it; besides, the first milk that the child can squeeze out of the breast answers the purpose of cleansing better than all the drugs in the apothecary's shop, and at the same time prevents inflammations of the breast, fevers, and other diseases incident to mothers.

It is strange how people came to think that the first thing given to a child should be drugs. This is beginning with medicine betimes, and no wonder if they generally end with it. It sometimes happens, indeed, that a child does not discharge the *meconium* so soon as could be wished; this has induced physicians, in such cases, to give something of an opening nature to cleanse the first passages. Midwives have improved upon this hint, and never fail to give syrups, oils, &c. whether they be necessary or not. Cramming an infant with such indigestible stuff as soon as it is born can hardly fail to make it sick, and is more likely to occasion diseases than to prevent them. Children are seldom long after the birth without having passage both by stool and urine; though these evacuations may be wanting for some time without any danger. But if children must have something before they be allowed the breast, let it be a little thin water pap, to which may be added an equal quantity of new milk, or rather water alone, with the addition of a little moist sugar. If this be given without any wine or spiceries it will neither heat the blood, load the stomach, nor occasion gripes.

Upon the first sight of an infant, almost every person is struck with the idea of its being weak, feeble, and wanting support. This naturally suggests the need of cordials. Accordingly wines are universally mixed with the first food of children. Nothing can be more fallacious than this way of reasoning, or more hurtful to infants than the conduct founded upon it. Children require very little food for some time after the birth, and what they receive should be thin, weak, light, and of a cooling quality. A very small quantity of wine is sufficient to heat and inflame the blood of an infant;

but every person conversant in these matters must know, that most of the diseases of infants proceed from the heat of their humors.

If the mother or nurse has enough of milk, the child will need little or no other food for the third or fourth month. It will then be proper to give it, once or twice a-day, a little of some food that is easy of digestion, as water-pap, milk-pottage, weak broth with bread in it, and such like. This will ease the mother, will accustom the child by degrees to take food, and will render the weaning both less difficult and less dangerous. All great and sudden transitions are to be avoided in nursing. For this purpose the food of children ought not only to be simple, but to resemble, as nearly as possible the properties of milk. Indeed, milk itself should make a principal part of their food, not only before they are weaned but for some time after.

Next to milk, we would recommend good light bread. Bread may be given to a child as soon as it shows an inclination to chew; and it may at all times be allowed as much plain bread as it will eat. The very chewing of bread will promote the cutting of the teeth, and the discharge of saliva, while, by mixing with the nurse's milk in the stomach, it will afford an excellent nourishment. Children discover an early inclination to chew whatever is put into their hands. Parents observe the inclination, but generally mistake the object. Instead of giving the child something which may at once exercise its gums and afford it nourishment, they commonly put into its hands a piece of hard metal, or impenetrable coral. A crust of bread is the best gum-stick. It not only answers the purpose better than any thing else, but has the additional properties of nourishing the child, and carrying the saliva down into the stomach, which is too valuable a liquor to be lost.

Bread, besides being used dry, may be many ways prepared into food for children. One of the best methods is to boil it in water, afterwards pouring the water off, and mixing with the bread a proper quantity of new milk unboiled. Milk is both more wholesome and nourishing this way than boiled, and is less apt to occasion costiveness. For a child farther advanced, bread may be mixed in veal or chicken broth, made into puddings or the like. Bread is a proper food for children at all times, provided it be plain, made of wholesome grain, and well fermented; but when enriched with fruits, sugars, or such things, it becomes very unwholesome.

It is soon enough to allow children animal food when they have

got teeth to eat it. They should never taste it till after they are weaned, and even then they ought to use it sparingly. Indeed, when children live wholly on vegetable food, it is apt to sour on their stomachs; but, on the other hand, too much flesh heats the body, and occasions fevers and other inflammatory diseases. This plainly points out a due mixture of animal and vegetable food as most proper for children.

Few things prove more hurtful to infants than the common method of sweetening their food. It entices them to take more than they ought to do, which makes them grow fat and bloated. It is pretty certain, if the food of children were quite plain, that they would never take more than enough. Their excesses are entirely owing to nurses. If a child be gorged with food at all hours, and enticed to take it, by making it sweet and agreeable to the palate, is it any wonder that such a child should in time be induced to crave more food than it ought to have?

Children may be hurt by too little as well as by too much food. After a child is weaned it ought to be fed four or five times a-day; but should never be accustomed to eat in the night; neither should it have too much at a time. Children thrive best with small quantities of food frequently given. This neither overloads the stomach nor hurts the digestion, and is certainly most agreeable to nature.

Writers on nursing have inveighed with such vehemence against giving children too much food, that many parents, by endeavoring to shun that error, have run into the opposite extreme, and ruined the constitution of their children. But the error of pinching children in their food is more hurtful than the other extreme. Nature has many ways of relieving herself when overcharged; but a child who is pinched with hunger, will never become a strong or a healthy man. That errors are frequently committed on both sides we are ready to acknowledge; but where one child is hurt by the quantity of its food, ten suffer by the quality. This is the principal evil, and claims our strictest attention.

Many people imagine, that the food which they themselves love cannot be bad for their children; but this notion is very absurd. In the more advanced periods of life, we often acquire an inclination for food which when children we could not endure. Besides, there are many things that by habit may agree very well with the stomach of a grown person, which would be hurtful to a child; as high-seasoned, salted, and smoke-dried provisions, &c. It would also be improper to feed children with fat meat, strong broths, rich soups, or the like.

All strong liquors are hurtful to children. Some parents teach their children to guzzle ale, and other fermented liquors, at every meal. Such a practice cannot fail to do mischief. These children seldom escape the violence of the small-pox, measles, whooping cough, or some inflammatory disorder. Milk, water, butter-milk, or whey, are the most proper for children to drink. If they have any thing stronger, it may be fine small beer, or a little wine mixed with water. The stomachs of children can digest well enough without the assistance of warm stimulants; besides, being naturally hot, they are easily hurt by every thing of a heating quality.

Few things are more hurtful to children than unripe fruits. They weaken the powers of digestion, and sour and relax the stomach, by which means it becomes a proper nest for insects. Children, indeed, show a great inclination for fruit, and I am apt to believe, that if good ripe fruit were allowed them in proper quantity it would have no bad effects. We never find a natural inclination wrong if properly regulated. Fruits are generally of a cooling nature, and correct the heat and acrimony of the humors. This is what most children require; only care should be taken lest they exceed. Indeed the best way to prevent children from going to excess in the use of fruit, or eating that which is bad, is to allow them a proper quantity of what is good.*

Roots which contain a crude viscid juice should be sparingly given to children. They fill the body with gross humors, and tend to produce eruptive diseases; this caution is peculiarly necessary for the poor. Glad to obtain, at a small price, what will fill the bellies of their children, they stuff them two or three times a day with crude vegetables. Children had better eat a smaller quantity of food which yields a wholesome nourishment, than be crammed with what their digestive powers are unable properly to assimilate.

Butter ought likewise to be sparingly given to children. It both relaxes the stomach, and produces gross humors. Indeed, most things that are fat or oily have this effect. Butter when salted becomes still more hurtful. Instead of butter, so liberally given to children in most parts of Britain, we would recommend honey.

* Children are always sickly in the fruit season, which may be thus accounted for:—Two-thirds of the fruit which comes to market in this country is really unripe; and children not being in a condition to judge for themselves, eat whatever they can lay their hands upon, which often proves little better than poison to their tender bowels. Servants, and others who have the care of children, should be strictly forbidden to give them any fruit without the knowledge of their parents.

Children who eat honey are seldom troubled with worms ; they are also less subject to cutaneous diseases, as itch, scabbed head, &c.

Many people err in thinking that the diet of children ought to be altogether moist. When children live entirely upon slops, it relaxes their solids, renders them weak, and disposes them to the rickets, the scrofula, and other glandular disorders. Relaxation is one of the most general causes of the diseases of children. Every thing, therefore, which tends to unbrace their solids ought to be carefully avoided.

We would not be understood by these observations as confining children to any particular kind of food. Their diet may be frequently varied, provided always that sufficient regard be had to simplicity.

EXERCISE OF CHILDREN.—Of all the causes which conspire to render the life of man short and miserable, none has greater influence than the want of proper exercise : healthy parents, wholesome food, and proper clothing, will avail little, where exercise is neglected. Sufficient exercise will make up for several defects in nursing : but nothing can supply the want of it. It is absolutely necessary to the health, the growth, and the strength of children.

The desire of exercise is coeval with life itself. Were this principle attended to, many diseases might be prevented. But, while indolence and sedentary employments prevent two-thirds of mankind from either taking sufficient exercise themselves, or giving it to their children, what have we to expect but diseases and deformity among their offspring ? The rickets, so destructive to children, never appeared in Britain till manufactures began to flourish, and people, attracted by the love of gain, left the country to follow sedentary employments in great towns. It is amongst these people that this disease chiefly prevails, and not only deforms but kills many of their offspring.

The conduct of other young animals shows the propriety of giving exercise to children. Every other animal makes use of its organs of motion as soon as it can ; and many of them, even when under no necessity of moving in quest of food, cannot be restrained without force. This is evidently the case with the calf, the lamb, and most other young animals. If these creatures were not permitted to frisk about and take exercise, they would soon die or become diseased. The same inclination appears very early in the human species ; but as they are not able to take exercise themselves, it is the business of their parents and nurses to assist them.

Children may be exercised various ways. The best method, while they are light, is to carry them about in the nurse's arms.* This gives the nurse an opportunity of talking to the child, and of pointing out every thing that may please and delight its fancy. Besides, it is much safer than swinging an infant in a machine, or leaving it to the care of such as are not fit to take care of themselves. Nothing can be more absurd than to set one child to keep another ; this conduct has proved fatal to many infants, and has rendered others miserable for life.

When children begin to walk, the safest and best method of leading them about is by the hands. The common way, of swinging them in leading-strings fixed to their backs, has several bad consequences. It makes them throw their bodies forward, and press with their whole weight upon their stomach and breast ; by this means the breathing is obstructed, the breast flattened, and the bowels compressed ; which must hurt the digestion, and occasion consumptions of the lungs, and other diseases.

It is a common notion, that if children are set upon their feet too soon, their legs will become crooked. There is reason to believe that the very reverse of this is true. Every member acquires strength in proportion as it is exercised. The limbs of children are weak indeed, but their bodies are proportionably light ; and had they skill to direct themselves, they would soon be able to support their own weight. Who ever heard of any other animal that became crooked by using its legs too soon ? Indeed, if a child be not permitted to make any use of its legs till a considerable time after its birth, and be then set upon them with its whole weight at once, there may be some danger ; but this proceeds entirely from the child's not having been accustomed to use its legs from the beginning.

Mothers of the poorer sort think they are great gainers by making their children lie or sit while they themselves work. In this they are greatly mistaken. By neglecting to give their children exercise, they are obliged to keep them a long time before they can do any thing for themselves, and to spend more on medicine than would have paid for proper care.

To take care of their children is the most useful business in which even the poor can be employed : but, alas ! it is not always

* The nurse ought to be careful to keep the child in a proper position ; as deformity is often the consequence of inattention to this circumstance. Its situation ought also to be frequently changed. I have known a child's legs bent all on one side, by the nurse carrying it constantly on one arm.

in their power. Poverty often obliges them to neglect their offspring in order to procure the necessaries of life. When this is the case, it becomes the interest as well as the duty of the public to assist them. Ten thousand times more benefit would accrue to the state by enabling the poor to bring up their own children, than from all the hospitals* that ever can be erected for that purpose.

Whoever considers the structure of the human body will soon be convinced of the necessity of exercise for the health of children. The body is composed of an infinite number of tubes, whose fluids cannot be pushed on without the action and pressure of the muscles. But, if the fluids remain inactive, obstructions must happen, and the humors will of course be vitiated, which cannot fail to occasion diseases. Nature has furnished both the vessels which carry the blood and lymph with numerous valves, in order that the action of every muscle might push forward their contents; but without action, this admirable contrivance can have no effect. This part of the animal economy proves to a demonstration the necessity of exercise for the preservation of health.

Arguments to show the importance of exercise might be drawn from every part of the animal economy; without exercise the circulation of the blood cannot be properly carried on, nor the different secretions duly performed; without exercise, the fluids cannot be properly prepared, nor the solids rendered strong or firm. The action of the heart, the motion of the lungs, and all the vital functions, are greatly assisted by exercise. But to point out the manner in which these effects are produced would lead us farther into the economy of the human body than most of those for whom this treatise is intended would be able to follow. We shall therefore only add, that when exercise is neglected, none of the animal functions can be duly performed; and when this is the case, the whole constitution must go to wreck.

A good constitution ought certainly to be our first object in the management of children. It lays a foundation for their being useful and happy in life; and whoever neglects it, not only fails in his duty to his offspring, but to society.

* If it were made the interest of the poor to keep their children alive, we should lose very few of them. A small premium given annually to each poor family, for every child they have alive at the year's end, would save more infant lives than if the whole revenue of the nation were expended on hospitals for this purpose. This would make the poor esteem fertility a blessing; whereas many of them think it the greatest curse that can befall them; and in place of wishing their children to live, so far does poverty get the better of natural affection, that they are often very happy when they die.

One very common error of parents, by which they hurt the constitutions of their children, is the sending them too young to school. This is often done solely to prevent trouble. When the child is at school, he needs no keeper. Thus the school-master is made the nurse; and the poor child is fixed to a seat seven or eight hours a-day, which time ought to be spent in exercise and diversions. Sitting so long cannot fail to produce the worst effects upon the body; nor is the mind less injured. Early application weakens the faculties, and often fixes in the mind an aversion to books which continues for life.*

But suppose this were the way to make children scholars, it certainly ought not to be done at the expense of their constitutions. Our ancestors, who seldom went to school very young, were not less learned than we. But we imagine the boy's education will be quite marred, unless he be carried to school in his nurse's arms. No wonder that such hot-bed plants seldom become either scholars or men!

Not only the confinement of children in public schools, but their number often proves hurtful. Children are much injured by being kept in crowds within doors; their breathing not only renders the place unwholesome, but if any one of them happen to be diseased, the rest catch the infection. A single child has been often known to communicate the bloody flux, the whooping-cough, the itch, or other diseases, to almost every individual in a numerous school.

But, if fashion must prevail, and infants are to be sent to school, we would recommend it to teachers, as they value the interests of society, not to confine them too long at a time, but allow them to run about and play at such active diversions as may promote their growth; and strengthen their constitutions. Were boys, instead of being whipped for stealing an hour to run, ride, swim, or the like, encouraged to employ a proper part of their time in these manly and useful exercises, it would have many excellent effects.

It would be of great service to boys, if, at a proper age, they were taught the military exercise. This would increase their strength, inspire them with courage, and when their country called for their assistance, would enable them to act in her defence, without being obliged to undergo a tedious and troublesome course of

* It is undoubtedly the duty of parents to instruct their children, at least till they are of an age proper to take some care of themselves. This would tend much to confirm the ties of parental tenderness and filial affection, of the want of which there are at present so many deplorable instances. Though few fathers have time to instruct their children, yet most mothers have; and surely they cannot be better employed.

instructions, at a time when they are less fit to learn new motions, gestures, &c.*

An effeminate education will infallibly spoil the best natural constitution; and if boys are brought up in a more delicate manner than even girls ought to be, they will never be men.

Nor is the common education of girls less hurtful to the constitution than that of boys. Miss is set down to her frame before she can put on her own clothes; and is taught to believe, that to excel at the needle is the only thing that can entitle her to general esteem. It is unnecessary here to insist upon the dangerous consequences of obliging girls to sit too much. They are pretty well known, and are too often felt at a certain time of life. But supposing this critical period to be got over, greater dangers still wait them when they come to be mothers. Women who have been early accustomed to a sedentary life, generally run great hazard in child-bed; while those who have been used to romp about, and take sufficient exercise, are seldom in any danger.

One hardly meets with a girl who can at the same time boast of early performances by the needle, and a good constitution. Close and early confinement generally occasions indigestions, headaches, pale complexions, pain of the stomach, loss of appetite, coughs, consumptions of the lungs, and deformity of body. The last of these, indeed, is not to be wondered at, considering the awkward postures in which girls sit at many kinds of needlework, and the delicate flexible state of their bodies in the early periods of life.

Would mothers, instead of having their daughters instructed in many trifling accomplishments, employ them in plain work and housewifery, and allow them sufficient exercise in the open air, they would both make them more healthy mothers, and more useful members of society. I am no enemy to genteel accomplishments, but would have them only considered as secondary, and always disregarded when they impair health.

Many people imagine it a great advantage for children to be early taught to earn their bread. This opinion is certainly right, provided they were so employed as not to hurt their health or

* I am happy to find that the masters of academies now begin to put in practice this advice. Each of them ought to keep a drill-serjeant for teaching the boys the military exercise. This, besides contributing to their health and vigor of body, would have many other happy effects.

Gymnastic exercises are becoming justly popular, and their superiority over the warlike needs not to be told to Americans.

growth; but, when these suffer, society, instead of being benefited, is a real loser by their labor. There are few employments, except sedentary ones, by which children can earn a livelihood; and if they be set to these too soon, it ruins their constitutions. Thus, by gaining a few years from childhood, we generally lose twice as many in the latter period of life, and even render the person less useful while he does live.

In order to be satisfied of the truth of this observation, we need only look into the great manufacturing towns, where we shall find a puny degenerate race of people, weak and sickly all their lives, seldom exceeding the middle period of life; or if they do, being unfit for business, they become a burden to society. Thus arts and manufactures, though they may increase the riches of a country, are by no means favorable to the health of its inhabitants. Good policy would therefore require, that such people as labor during life should not be set too early to work. Every person conversant in the breed of horses, or other working animals, knows, that if they be set to hard labor too soon, they will never turn out to advantage. This is equally true with respect to the human species.

There are, nevertheless, various ways of employing young people, without hurting their health. The easier parts of gardening, husbandry, or any business carried on without doors, are most proper. These are employments which most young people are fond of, and some parts of them may be always adapted to their age, taste, and strength.*

Such parents, however, as are under the necessity of employing their children within doors ought to allow them sufficient time for active diversions without. This would both encourage them to do more work, and prevent their constitutions from being hurt.

Some imagine that exercise within doors is sufficient; but they are generally mistaken. One hour spent in running, or any other exercise without doors, is worth ten within. When children cannot go abroad, they may indeed be exercised at home. The best method of doing this, is to make them run about in a large room, or dance. This last kind of exercise, if not carried to excess, is of excellent service to young people. It cheers the spirits, promotes perspiration, strengthens the limbs, &c. I knew an eminent physician who used to say, that he made his children dance, in-

* I have been told that in China, where the police is the best in the world, all the children are employed in the easier part of gardening and husbandry; as weeding, gathering stones off the land, and such like.

stead of giving them physic. It were well if more people followed his example.

The cold bath may be considered as an aid to exercise. By it the body is braced and strengthened, the circulation and secretions promoted, and, were it conducted with prudence, many diseases, as rickets, scrofula, &c. might thereby be prevented. The ancients, who took every method to render children hearty and robust, were no strangers to the use of the cold bath; and, if we may credit report, the practice of immersing children in daily cold water must have been very common among our ancestors.

The greatest objection to the use of the cold bath arises from the superstitious prejudices of nurses. They are often so strong, that it is impossible to bring them to make a proper use of it. I have known some of them who would not dry a child's skin after bathing it, lest it should destroy the effect of the water. Others will even put cloths dipt in the cold water upon the child, and either put it to bed, or suffer it to go about in that condition. Some believe, that the whole virtue of the water depends upon its being dedicated to a particular saint; while others place their confidence in a certain number of dips, as three, seven, nine, or the like; and the world could not persuade them, if these do not succeed, to try it a little longer. Thus by the whims of nurses, children lose the benefit of the cold bath, and the hopes of the physician from that remedy are often frustrated.

We ought not, however, entirely to set aside the cold bath, because some nurses make a wrong use of it. Every child, when in health, should at least have its extremities daily washed in cold water. This is a partial use of the cold bath, and is better than none. In winter this may suffice; but in the warm season, if a child be relaxed, or seem to have a tendency to the rickets or scrofula, its whole body ought to be frequently immersed in cold water. Care, however, must be taken not to do this when the body is hot, or the stomach full. The child should be dipped only once at a time, should be taken out immediately, and have its skin well rubbed with a dry cloth.

BAD EFFECTS OF UNWHOLESOME AIR UPON CHILDREN.—Few things prove more destructive to children than confined or unwholesome air. This is one reason why so few of those infants who are put into hospitals, or parish-workhouses, live. These places are generally crowded with old, sickly, and infirm people;

by which means the air is rendered so extremely pernicious, that it becomes a poison to infants.

Want of wholesome air is likewise destructive to many of the children born in great towns. There the poorer sort of inhabitants live in low, dirty, confined houses, to which the fresh air has scarcely any access. Though grown people, who are hardy and robust, may live in such situations, yet they generally prove fatal to their offspring, few of whom arrive at maturity, and those who do are weak and deformed. As such people are not in a condition to carry their children abroad into the open air, we must lay our account with losing the greater part of them. But the rich have not this excuse. It is their business to see that their children be daily carried abroad, and that they be kept in the open air for a sufficient time. This will always succeed better if the mother goes along with them. Servants are often negligent in these matters, and allow a child to sit or lie on the damp ground, instead of leading or carrying it about. The mother surely needs air as well as her children; and how can she be better employed than in attending them?

A very bad custom prevails, of making children sleep in small apartments, or crowding two or three beds into one chamber. Instead of this, the nursery ought always to be the largest and best aired room in the house. When children are confined in small apartments, the air not only becomes unwholesome, but the heat relaxes their solids, renders them delicate, and disposes them to colds and many other disorders. Nor is the custom of wrapping them too close in cradles less pernicious. One would think that nurses were afraid lest children should suffer by breathing free air, as many of them actually cover the child's face while asleep, and others wrap a covering over the whole cradle, by which means the child is forced to breathe the same air over and over all the time it sleeps. Cradles, indeed, are on many accounts hurtful to children, and it would be better if the use of them were totally laid aside.*

* It is amazing how children escape suffocation, considering the manner in which they are often rolled up in flannels, &c. I lately attended an infant, whom I found muffled up over head and ears in many folds of flannel, though it was in the middle of June. I begged for a little free air to the poor babe; but though this indulgence was granted during my stay, I found it always on my return in the same situation. Death, as might be expected, soon freed the infant from all its miseries; but it was not in my power to free the minds of its parents from those prejudices which proved fatal to their child.

I was very lately called to see an infant which was said to be expiring in convulsion fits. I desired the mother to strip the child, and wrap it in a loose covering. It had no more fits.

A child is generally laid to sleep with all its clothes on; and if a number of others are heaped above them it must be overheated: by which means it cannot fail to catch cold on being taken out of the cradle, and exposed to the open air with only its usual clothing, which is too frequently the case.

Children who are kept within doors all day, and sleep all night in warm close apartments, may, with great propriety, be compared to plants nursed in a hot-house, instead of the open air. Though such plants may by this means be kept alive for some time, they will never arrive at that degree of strength, vigor, and magnitude, which they would have acquired in the open air, nor would they be able to bear it afterwards should they be exposed to it.

Children brought up in the country, who have been accustomed to open air, should not be too early sent to great towns, where it is confined and unwholesome. This is frequently done with a view to forward their education, but proves very hurtful to their health. All schools and seminaries of learning ought, if possible, to be so situated as to have fresh, dry, wholesome air, and should never be too much crowded.

Without entering into a detail of the particular advantages of wholesome air to children, or of the bad consequences which proceed from the want of it, I shall only observe that of several thousands of children which have been under my care, I do not remember one instance of a single child who continued healthy in a close confined situation; but have often known the most obstinate diseases cured by removing them from such a situation to an open free air.

OF NURSES.—It is not here intended to lay down rules for the choice of nurses. This would be wasting time. Common sense will direct every one to choose a woman who is healthy, and has plenty of milk.* If she be at the same time cleanly, careful, and good-natured, she can hardly fail to make a proper nurse. After all, however, the only certain proof of a good nurse, is a healthy child upon her breast. But, as the misconduct of nurses often proves fatal to children, it will be of importance to point out a few of their most baneful errors, in order to rouse the attention of parents, and to make them look more strictly into the conduct of those to whom they commit the care of their infant offspring.

* I have often known people so imposed upon, as to give an infant to a nurse to be suckled who had not one drop of milk in her breast.

Though it admits of some exceptions, yet we may lay it down as a general rule, *That every woman who nurses for hire should be carefully looked after, otherwise she will not do her duty.* For this reason parents ought always to have their children nursed under their own eye, if possible; and where this cannot be done, they should be extremely circumspect in the choice of those persons to whom they intrust them. It is folly to imagine that any woman who abandons her own child to suckle another for the sake of gain, should feel all the affections of a parent towards her nursing; yet so necessary are these affections in a nurse, that but for them the human race would soon be extinct.

One of the most common faults of those who nurse for hire, is dosing children with stupefactive, or such things as lull them asleep. An indolent nurse, who does not give a child sufficient exercise in the open air to make it sleep, and does not choose to be disturbed by it in the night, will seldom fail to procure for it a dose of laudanum, diacodium, saffron, or what answers the same purpose, a dose of spirits or other strong liquors. These, though they be certain poison to infants, are every day administered by many who bear the character of very good nurses.*

A nurse who has not milk enough is apt to imagine that this defect may be supplied by giving the child wines, cordial waters, or other strong liquors. This is an egregious mistake. The only thing that has any chance to supply the place of the nurse's milk, must be somewhat nearly of the same quality, as cow's milk, ass's milk, or beef tea, with a little bread. It never can be done by the use of strong liquors. These instead of nourishing an infant, never fail to produce the contrary effect.

Children are often hurt by nurses suffering them to cry long and vehemently. This strains their tender bodies, and frequently occasions ruptures, inflammations of the throat, lungs, &c. A child never continues to cry long without some cause, which might always be discovered by proper attention; and the nurse who can hear an infant cry till it has almost spent itself, without endeavoring to please it, must be cruel indeed, and is unworthy to be intrusted with the care of a human creature.

Nurses who deal much in medicine are always to be suspected. They trust to it and neglect their duty. I never knew a good nurse who had her Godfrey's Cordial, Daffey's Elixir, Dalby's Carminative, &c. at hand. Such nurses generally imagine that a

* If a mother on visiting her child at nurse finds it always asleep, I would advise her to remove it immediately; otherwise it will soon sleep its last.

dose of medicine will make up for all defects in food, air, exercise and cleanliness. By errors of this kind, I will venture to say, that one half the children who die annually in London lose their lives.

Allowing children to continue long wet, is another very pernicious custom of indolent nurses. This is not only disagreeable, but it galls and frets the infant, and, by relaxing the solids, occasions scrofula, rickets, and other diseases. A dirty nurse is always to be suspected.

Nature often attempts to free the bodies of children from bad humors, by throwing them upon the skin; by this means fevers and other diseases are prevented. Nurses are apt to mistake such critical eruptions for an itch, or some other infectious disorder. Accordingly they take every method to drive them in. In this way many children lose their lives; and no wonder, as Nature is opposed in the very method she takes to relieve them. It ought to be a rule, which every nurse should observe, never to stop any eruption without proper advice, or being well assured that it is not of a critical nature. At any rate, it is never to be done without previous evacuations.

Loose stools is another method by which Nature often prevents or carries off the diseases of infants. If these proceed too far, no doubt they ought to be checked; but this is never to be done without the greatest caution. Nurses, upon the first appearance of loose stools, frequently fly to the use of astringents, or such things as bind the body. Hence inflammatory fevers, and other fatal diseases, are occasioned. A dose of rhubarb, a gentle vomit, or some other evacuation, should always precede the use of astringent medicines.

One of the greatest faults of nurses is, concealing the diseases of children from their parents. This they are extremely ready to do, especially when the disease is the effect of their own negligence. Many instances might be given of persons who have been rendered lame for life by a fall from their nurse's arms, which she, through fear, concealed till the misfortune was past cure. Every parent who intrusts a nurse with the care of a child, ought to give her the strictest charge not to conceal the most trifling disorder or misfortune that may befall it.

We can see no reason, why a nurse who conceals any misfortune which happens to a child under her care till it loses its life or limb, should not be punished. A few examples of this would save the lives of many infants; but as there is little reason to expect that it ever will be the case, we would earnestly recommend

it to all parents to look carefully after their children, and not to trust so valuable a treasure entirely in the hands of a hireling.

No person ought to imagine these things unworthy of his attention. On the proper management of children depend not only their health and usefulness in life, but likewise the safety and prosperity of the state to which they belong. Effeminacy ever will prove the ruin of any state where it prevails; and, when its foundations are laid in infancy, it can never afterwards be wholly eradicated. Parents who love their offspring, and wish well to their country, ought, therefore, in the management of their children, to avoid every thing that may have a tendency to make them weak or effeminate, and to take every method in their power to render their constitutions strong and hardy—

——— By arts like these
Laconia nursed of old her hardy sons;
And Rome's unconquered legions urged their way,
Unhurt, through every toil in every clime.
Armstrong.

Few things tend more to the destruction of children than drenching them with drugs. That medicine may be *sometimes* necessary for children, I do not deny; but that it hurts them ten times for once it does them good, I will venture to assert.

DISEASES OF CHILDREN.

STILL-BORN INFANTS.

“**INFANTS** are sometimes born without showing any appearances of life, but where this, at the same time, is only suspended, not totally annihilated, the apparent cessation of the action of the heart and lungs may be owing to a variety of causes, such as universal weakness of the vital powers, collections of glairy matter in the windpipe, or a congestion of blood in the lungs, arising either from a long protracted labor, and consequent detention of the head in the passage, or the neck of the infant being tightly encircled by the navel-string or by the mouth of the womb, so as to stop the circulation of the blood.

When the infant shows little or no signs of life after a tedious

labor, it ought to be cleansed, and then wrapped up in rannel, having first rubbed its chest with volatile spirits mixed with brandy, and stimulated its nostrils with volatile salts. Should these means fail in re-animating it, we may introduce a pipe or catheter into its mouth, and thereby endeavor to fill the lungs with air, and make them perform the office of respiration, which plan ought to be persevered in for a considerable time. Besides these means, the infant may be immersed in a warm bath, in order that a proper degree of heat may be restored to its body. In all such cases it will be of the utmost consequence also not to detach the after-burden too soon from its connexion with the womb, and not to be in a hurry to apply a ligature on the navel-string. These are the first steps to be attended to.

Where there is either stupor present, or congestion in the lungs, it will be advisable to lessen the determination of the blood to the head or chest, by suffering a small quantity of blood to be lost from the divided navel-string prior to putting a ligature round it."

RETENTION OF THE MECONIUM.

"THE bowels of all infants, at the time of their birth, are filled with a blackish-colored and viscid matter, of the consistence of syrup, known to professional men by the name of meconium. The efforts of nature are in general sufficient to dislodge and carry it off, if assisted by the mother's milk, which is always at first of a laxative quality, and therefore infants should be applied to the breast as soon as they show an inclination to suck. But should it be retained, or not sufficiently carried off, a small tea-spoonful of castor oil, or a little magnesia, may be given, particularly if the secretion of milk in the mother's breasts is rather tardy."

ACIDITIES, FLATULENCY, AND GRIPES.

"THE species of food most commonly employed for the nourishment of children, being of an acescent nature, is apt to turn sour on the stomach, particularly if the body be any way disordered. Hence most of the complaints of children are accompanied with evident signs of acidity, such as flatulency, griping pains, and stools of a green color. The child so affected becomes restless, cries much, and draws up its legs forcibly to its body, is troubled with

sour belchings, vomiting or purging, and not unfrequently becomes convulsed. To remove the offending matter, it will be necessary to give the infant about five or six grains of magnesia, and two of rhubarb, mixed in a little peppermint or caraway water. The medicine, at the same time that it occasions a gentle operation of the bowels, will tend to correct the acidity, by which means it not only removes the disease, but obviates its cause. If necessary it should be repeated the succeeding day, being far preferable to prepared chalk and such other medicines, which although they correct the acidity, are apt to lodge in the bowels, and occasion costiveness.

“A costive habit is, indeed, of itself a frequent cause of flatulency and griping pains in infants, and when it occurs, ought to be obviated, by administering the above medicine. If not found sufficiently active, fifteen or twenty drops of the compound tincture of senna may be added. When the griping pains are very acute, warmth may be applied externally to the stomach and bowels, by fomenting them in flannels wrung out in warm water.”

GALLING AND EXCORIATION.

“YOUNG children are very apt to become excoriated in particular parts of the body, particularly about the groins, and wrinkles of the neck, behind the ears and under the arms, such places being kept much moistened by urine or sweat.

These complaints prove very troublesome to children, and are, in some measure, owing to a want of due cleanliness in the mother or nurse. To prevent them, and likewise to remove them when they do occur, it will be necessary to wash the parts well with cold water once or twice a-day, to change the linen often, and keep the child perfectly clean and sweet. After the child is washed and dried, the parts affected may be sprinkled with a little fine chalk, mixed with an equal proportion of prepared calamine. Where the excoriation or galling is considerable, the parts, after having been washed with cold water, may be dabbed with a linen rag moistened in equal parts of rectified spirit and common water, with an addition of two or three drops of the solution of acetate of lead, and then be dressed with fine lint spread with spermaceti ointment.

As very bad consequences have however been known to result

from hastily drying up discharges from behind the ears and other parts in children, some caution is requisite in using all such external applications."

STOPPAGE OF THE NOSE, OR SNUFFLES.

"THIS is a trifling complaint very incident to young children, wherein the nostrils are plugged up with a quantity of mucous fluid which at length acquires a gross consistence, and not only prevents their breathing freely, but impedes their sucking and swallowing. It seldom requires any thing more than to cleanse the parts with tepid water, and then to smear the nostrils with a little lard or sweet oil, keeping the head pretty warm at the same time, and the bowels open with a little castor oil, or a few grains of magnesia and rhubarb."

YELLOW GUM.

"THIS is a trifling degree of jaundice, with which some infants become affected a few days after their birth, and supposed to arise from a retention of the meconium, or some slight obstruction in the biliary passages. The complaint is accompanied with languor, a yellow tinge of the skin, high colored urine, and an unusual propensity to sleep.

In general, these symptoms are easily removed, by freely opening the child's bowels, by some medicine, when the mother's milk does not prove sufficiently purgative."

VOMITING.

"A vomiting in children is now and then an original disease, or is dependent on some other; but in many instances it arises from too much food received into the stomach, either from sucking or their being fed.

When what has been taken is soon returned in an unaltered state, we may suspect that the vomiting is owing to over feeding the child, and this will only require moderation in future. When it is owing to food of an acrid nature, the diet ought to be changed, and aliment of a milder nature substituted in its stead. The

child's bowels may at the same time be opened by a few grains of magnesia and rhubarb.

Should the vomiting still continue, notwithstanding the adoption of these means, the stomach may be cleansed either with a few grains of the powder of ipecacuanha, or a weak solution of tartarized antimony. One grain of the latter may be dissolved in two ounces of common water, and a tea-spoonful of the solution be given every quarter of an hour until some degree of vomiting is excited.

In obstinate vomitings, a table-spoonful of the saline medicine in the act of effervescence, with two drops of the tincture of opium, may be given to the child, and its stomach be rubbed externally with camphorated spirit and a solution of ammonia, in the proportion of three parts of the former to one of the latter. If these means likewise prove ineffectual, a small blister may be applied immediately over the region of the organ affected.

Should the vomiting be a symptom attendant on some other disease, its remedy must be adapted to the proper treatment of its cause. If it has arisen, for instance, from the sudden disappearance or repulsion of some eruption on the skin, the child ought to be immersed in a warm bath of a moderate temperature, and when taken out of it, be well wiped and put in a warm bed, the perspiration being encouraged at the same time, by giving it tepid diluting liquors to drink; or if it has been occasioned by a suppression of a discharge behind the ears or elsewhere, particularly if consequent upon drying applications, the return of the discharge should speedily be solicited."

LOOSENESS, OR PURGING.

"THIS complaint, as well as the former, very often arises in children from the introduction of unwholesome food into the stomach, as well as the sudden disappearance of some cutaneous eruption of a critical nature; and infants who have been recently deprived of the breast, are sometimes greatly disordered in their bowels by frequent watery stools, attended with gripes, and occasionally by convulsions. When this happens, restoring the child to the breast of its former nurse, or that of another, should not be neglected as the first necessary step to be taken.

Treatment.—In most cases, let the cause be what it will, it may be advisable to evacuate the offending matter by giving a gentle

emetical of a few grains of ipecacuanha, and afterwards to exhibit a mild purge of calomel joined with rhubarb. This may be repeated every third or fourth morning, according to the strength of the child, and other circumstances of the case."

ERUPTIONS.

"INFANTS are subject to numberless kinds of rash, from the first month until the completion of teething, and it has invariably been observed that their bowels are in a better state when affected by such eruptive complaints, than when they are without them. It therefore appears that nurses and parents should be very cautious how they interrupt or attempt to dry them up; for they often free the bodies of infants from injurious humors, which, if retained or repelled, might produce serious disorders.

It sometimes happens that an eruption now and then comes out on different parts of the body of a child at the breast, owing to some bad quality in the milk of the woman who suckles it. The first and material point to be attended to in all such cases, is to change the nurse, and then to keep the bowels open by a little magnesia, which will have the double effect of acting likewise as an absorbent. The strictest attention ought to be paid at the same time to cleanliness.

There are, however, many eruptive complaints to which children are liable, and which require more particular attention. An eruption, somewhat resembling the itch, is not unfrequently to be met with among children at the breast, as likewise in those who have cut their first teeth. It usually begins about the arms and thighs, but soon spreads to the other parts, and not unfrequently extends from the head to the feet. It appears as small as the points of pins in some places, with watery heads, and in others as large as peas, and occasionally in foul blotches, which, after breaking, form ugly scabs and sores. These die away, and are succeeded by similar ones in other parts, leaving the skin of a dirty hue.

The best treatment, in eruptions of this nature, is to wash the parts affected with about one drachm and a half of the solution of potash, diluted with one pint of water, dressing them afterward with sulphur ointment. If any medicine is given internally,

a few grains of sublimated sulphur, with an equal quantity of magnesia (say five grains of each for a child of five or six months old) may be given every other morning.

A slight species of nettle-rash is another eruptive complaint to which young children are liable. When the body is much covered with eruptions, and they remain long out, the bowels must be kept gently open, and care be taken that there shall be no exposure to cold, so as to repel them. If they should strike in suddenly, the return of the eruption ought to be solicited by having recourse to a warm bath, and then giving the child some diaphoretic medicine, such as a pap-spoonful of the camphor mixture, with three or four drops of the solution of tartarized antimony.

During the process of teething, other rashes of a larger size, sometimes attended with febrile symptoms, are often to be observed. They only require a proper attention to be paid to the state of the bowels, unless the fever runs high, in which case the means recommended under the head of teething must be adopted in addition.

A rash, somewhat resembling the measles, is apt to come out on the bodies of children during an early period of teething, which continues florid for three or four days, but does not dry off in the same manner with that disease. It is attended with no fever, but sometimes nausea and vomiting in a slight degree precede it. A few doses of some testaceous powder with two or three grains of the nitrate of potash (say three grains of the latter with six or eight of prepared chalk) may be given morning and evening to a child of six or eight months until the eruption disappears; when it will be advisable to administer some gentle laxative, such as calomel with a few grains of rhubarb, repeating it once or twice.

The following eruptive complaints claim a more particular attention."

RED GUM.

"THIS complaint consists in an eruption of small pimples on the skin, which are evident to the touch, generally red, but sometimes of a yellow hue. It appears for the most part on the face and neck in clusters or large patches; but it sometimes extends to the hands and legs, and occasionally it shows itself in small pimples which are filled with a limpid or purulent fluid.

It is considered by most medical practitioners to be salutary, and seems often to relieve infants of a difficulty of breathing and complaints of the bowels. It would therefore be improper to employ any external application to repel it. Its expulsion, suddenly, is to be prevented by avoiding any exposure to cold air, and giving the child a little magnesia and rhubarb, so as to keep its bowels properly open. Should the eruption suddenly disappear, and the child be evidently indisposed in consequence thereof, it will be advisable to put it into a warm bath, and afterwards give it two tea-spoonfuls, every second or third hour, of a weak solution of tartarized antimony in water, in the proportion of one grain of the former to three ounces of the latter. This will keep up a determination to the skin, and reproduce the eruption."

THRUSH.

"THIS disease is very common among infants, particularly those brought up by the hand, and appears in white specks on the corner of the lips, the tongue, and back part of the palate, spreading gradually over the inside of the mouth, and extending at length throughout the intestinal tube, if neglected.

Acidities in the stomach and bowels, or some acrimonious matter therein from bad milk, have usually been assigned as the common causes of the thrush in infants.

The disease, when an original one, is never attended with febrile symptoms at its commencement, although the infant's mouth is sometimes so heated as to excoriate the nurse's nipples, and so tender as to occasion it to suck with caution and reluctance; but when it has arisen after some bowel complaint, or other disorder, it is then accompanied with fever, and perhaps a severe purging. The accompanying fever is usually of the low kind.

When the thrush is of long standing, and has extended throughout the alimentary tube, it will prove of difficult cure, and frequently will terminate fatally, but when recent or confined to the mouth wholly, it may in general be easily subdued.

It will be proper to obviate a costive state of the bowels or acidities therein, by occasional doses of calomel joined with a few grains of rhubarb.

To keep the mouth comfortable and clean, the parts affected with specks may be touched three or four times a-day by means of a large camel's hair pencil with some detergent application,

such as either of the following—Dissolve three drachms of the sub-borate of soda, and two ounces of the honey of roses in four ounces of hot water; or, take one ounce of the honey of roses, fifteen drops of muriatic acid, warm water two ounces, and tincture of myrrh half an ounce. Let them be well mixed.

When the thrush appears of a malignant nature, and from the dark appearance of the specks, threatens to terminate in gangrenous ulceration, a decoction of the bark with a drop or two of muriatic acid conjoined to each dose, ought to be given four or five times a-day by the mouth. To render its efficacy greater and more certain, a clyster of the plain or simple decoction, in the quantity of three or four ounces, with an addition of half a drachm of the powder of the same, and six or eight drops of the tincture of opium, should there be a purging, may be injected morning and night.”

DENTITION, OR TEETHING.

“THIS process commences, in the majority of children, between the fifth and eighth month, and continues to the sixteenth at least, but sometimes much longer. No fixed period can, however, be pointed out for children to commence cutting their teeth, as some cut their first tooth at three or four months old, and others again show no appearance of any teeth before the eighth or ninth month.

The two fore teeth of the under jaw are those which usually appear first, and some time afterward, two are to be observed in the upper jaw exactly opposite to the former. In process of time, the four double teeth commonly denominated the grinders, succeed the front teeth, and at the expiration of some weeks the canine or dog teeth appear; and lastly (of the first set of teeth) the two corresponding ones in the upper jaw, distinguished under the appellation of the eye-teeth.

In children who are healthy, the teeth are cut soon and easily; but in weak and unhealthy infants, the process of dentition is slow, and does not commence at the accustomed period; moreover, the teeth are cut irregularly, both by their appearing first in the upper jaw, and at some distance from each other, instead of being close to each other. About the sixth or seventh year, the first set of teeth in children are shed and replaced by a fresh one, and about the twentieth year or later, appear the inner grinders, or teeth of wisdom, one coming through the gums in the corner of each jaw.

The symptoms which precede and accompany dentition are various in different children, but in general they are as follow :—the child begins to drivell much, the gums swell, spread, and become hot; there is often a circumscribed redness in the cheeks, eruptions on the skin, a looseness accompanied by gripings and greenish stools, starting during sleep, restlessness, febrile heat, some difficulty of breathing, sudden shrieks, the fingers of the child often thrust into its mouth, and this beset with the thrush. Where the irritation of the gums is considerable, convulsions sometimes ensue.

It has been found that children who drivell much, or whose bowels are loose, cut their teeth with the greatest safety and ease, and that those who are inclined to be lean, go through the process of dentition easier than those who are fat and robust. The extremes of high health and debility are both unfavorable to children who are cutting their teeth; the former being more exposed to acute fever or convulsions, the other to atrophy and rickets.

Treatment.—Pure air, exercise, strict cleanliness, food easily digested in the stomach, and taken in small quantities, but frequently, keeping the bowels sufficiently open, together with paying a due attention to every circumstance likely to promote the general health of the child, will greatly contribute to its safely passing through the painful and dangerous process of teething.

As the hazard attendant on dentition is considerably lessened, nay, often wholly prevented, by a looseness occurring spontaneously, it will be prudent to encourage any laxity of the bowels that may take place naturally, particularly in children of a full habit, unless it runs to excess; but where none takes place spontaneously, or the child is apt to be confined in its body, two or more stools daily ought to be procured by means of some gentle laxative, such as two grains of calomel, joined with a little magnesia or a few grains of rhubarb. These may be assisted occasionally by aperient clysters.

If the child is feverish, and the gums much inflamed, it may be necessary to scarify them with the edge of a lancet. If this does not relieve the symptoms, a tepid bath may be used once or twice a-day.

For the purpose of allaying irritation during painful and difficult dentition, nurses are very apt to resort to one or other of the preparations of opium, in order that their own rest may not be disturbed throughout the night, and this often proves injurious to the child. The safest anodyne which can, however, be adminis-

tered to children in cases of urgency, and which really require the aid of some tranquilizing medicine, is the syrup of poppies, about a tea-spoonful of which may be given as a dose.

During the process of teething, children are sometimes incommoded by an excoriation of the gums; but these will, in general, readily yield to touching the parts affected with a little honey and borax, and keeping the bowels properly open. The same treatment must be adopted where the lips and mouth are beset with the thrush.

If acidity prevails in the stomach, accompanied by flatulency and griping pains during dentition, a few doses of magnesia in a little peppermint, caraway, or dill water, will be the best remedies."

CONVULSIONS.

"CONVULSIONS proceed from various causes during infancy. They very frequently arise from irritation in the bowels, from dentition, or in the course of eruptive fevers. Sometimes they proceed from immediate affections of the brain itself, and very often they occur in hydrocephalus. They may be distinguished from those proceeding from a primary affection of the brain, and those occasioned by sympathy with some other organ in a state of irritation. It is not, however, easy to make the diagnosis in every instance: and when convulsions continue long, whatever may have been their origin, the brain ultimately suffers; and if the disease be protracted, the patient becomes emaciated, and perhaps paralytic, or even hydrocephalus may very early be excited.

We may be assisted in our judgment, by examining the gums, especially if the child be about the time of life when teeth appear; by inquiring into the state of the bowels, whether they be loose or bound, or the child be troubled with worms; by learning if an eruption has suddenly disappeared: or if the child has been frightened, or had heavy food, or too much food, or been sucking a woman whose mind had been recently agitated; or if none of these causes be discovered, we should inquire if the child has already had those febrile eruptive diseases, which are often preceded by convulsions, especially small pox. In at least nine cases out of ten, convulsions proceed from irritation of the bowels; the stools being generally unnatural, or the digestive functions impaired. This observation is of much importance in practice, as it points out both the means of prevention and of cure.

Very young infants are subject to a slight degree of spasms called inward fits, in which the mouth is, during sleep, drawn into a smile; the eye-lids are not quite closed, and the eyes are turned about, so as at times to discover the white; the breathing seems occasionally to flutter, and the child is very easily startled. These fits appear to be occasioned by wind in the stomach or bowels, for they are relieved by a discharge of wind, and require some carminative, such as sugar of anise, with a gentle laxative. They generally go off in a short time, but sometimes they are succeeded by vomiting or purging, or drowsiness, ending in convulsions.

Some children, very early after birth, appear languid, moan, and pass dark colored fæces, different from meconium, and after it, in the usual course of things, ought to be removed. Presently they fall into a state, rather resembling syncope than convulsions, and die perhaps in forty-eight hours after they are born. The early use of calomel, in small doses, combined with some gentle aromatic, is proper.

Others, soon after birth, are seized with a violent fit of crying and they become more or less distinctly convulsed, and the muscular irritation may repeatedly recur. This is relieved by the warm bath, gentle laxatives, and rubbing the belly with a little laudanum. I have sometimes thought that this state was induced by tying the cord too near the belly, by which an irritation was communicated to the abdominal viscera. Infants of a month old, who are subject to severe fits of crying from colic, which is often induced by bad nursing, may be suddenly carried off by a convulsion after a violent and continued paroxysm of screaming. This state requires great attention to the bowels and to diet.

When a child is seized with convulsions, a very great alarm prevails; and it is expected if the practitioner arrive before the child is carried off, or has recovered from the fit, very prompt and active means must be employed. The first thing to be done, is, to order a warm bath and a glyster to be got immediately: and while these are preparing, we inquire into the circumstances of the case, and examine the gums. If the child be at the time of teething, and no other cause be discovered, it will be proper to cut the gum freely over that part where the teeth ought, according to the usual order of dentition, to appear, even although no swelling be discovered. Then the child is to be put into the warm bath, the face alone being kept above the water, and he is to be retained there for a few minutes, if the fit do not pass off sooner. In some instances the addition of a little hartshorn or mustard to the bath

is useful. When the child is taken out of the bath, a cloth is to be applied over the stomach, or great part of the abdomen, wet with strong spirits, and lightly sprinkled with pepper. A clyster is at the same time to be thrown up, so as to operate speedily; and this is to be followed by a calomel purge, and the subsequent use of laxatives, to keep the bowels open. Emetics have also been employed during the fits; but unless we have reason to suspect that some indigestible or improper substance has been taken, they will not be so beneficial as laxatives. But when fits are only apprehended in dentition, from starting, feverishness, and circumstances ascertained from former experience to precede convulsions, a gentle emetic is often of service, and ought to be followed by the warm bath, and some antispasmodic, such as *asafoetida*, with the addition of oil of anise, is a very useful remedy, or we may give tincture of *hyoscyamus* with oil of anise. When it is deemed proper to exhibit emetics during the fit, a few spoonfuls of a solution of sulphate of zinc may be given in quick succession, as operating speedily and safely; or *ipecacuanha* may be employed, and the fauces tickled with a feather, to hasten its operation.

If there be the appearance of much determination of blood to the head, we should instantly bleed the child; but if the face be pale, a few drops of the aromatic spirit of ammonia may be given repeatedly, or a little white-wine whey may be used in place of it. Opium is hurtful when the face is flushed; and even when it is pale, is only useful when there seems to be considerable irritation about the bowels, or from the gums. Oil of rue is strongly recommended by Dr. Underwood; and when the fits are repeated, it will be proper to make use of this, or *asafoetida*, castor or other antispasmodics. The spine should, in such cases, be repeatedly rubbed with some stimulant embrocation, or oil of amber, and a blister should be applied to the head, after it has been bathed for a time with cold vinegar. After the bowels have been well evacuated by an active purge, which ought not to be neglected in any case of convulsions, anodyne injections will be very useful. They often act like a charm in quieting that peculiar irritability of the nervous system in children, which renders them so prone to these affections. If the laudanum should fail, which it will sometimes do, we may try injections of the watery solution of *asafoetida*, and particularly of the strong infusion of the common hops. In those terrible cases of epilepsy where paroxysm follows paroxysm in rapid succession, I have witnessed very beneficial effects from injections of cold water. They will sometimes immediately sus-

pend the paroxysms. Ice, or other very cold applications to the region of the stomach are also serviceable.

After the period of infancy is past, and during the time when the second set of teeth are coming out, convulsions are generally of the epileptic kind, attack suddenly, the patient screaming out as if terrified, and then he falls down convulsed. When the fit goes off, the patient becomes nearly quite well. These do not indicate that the patient shall be subject, after puberty, to epilepsy. They are relieved by attending to the state of the gums, removing decayed teeth, and cutting the gum over the grinder which is just coming out, but especially by keeping the bowels open. *Ol. succini*, valerian, sea-bathing, and tonic medicines have also been found of service; *asafoetida* or camphor given by the mouth, or in clysters, have been useful. Convulsions have sometimes been caused by impure air, and can only, in such cases, be relieved by a removal to a purer atmosphere. This is a fact which it may be of service to remember."

WEANING BRASH.

THIS disorder appears most frequently in children who are weaned too soon, or have been brought up without the breast by improper food.

It shows itself at first with frequent griping and purging, the stools being usually of a green color, and not unfrequently there is a vomiting of bilious matter. As the disease advances in its progress, the evacuations from the intestines acquire an ash-color, and a shining appearance. The child loses its strength and flesh, becomes emaciated, and not unfrequently is carried off by convulsions. Its belly is usually tumid and swelled, and upon pressing it with the hand, the glands of the mesentery or caul will be found enlarged and hardened.

For the removal of this disease, the first point to be attended to on its being discovered, is an attention to diet, and, if possible, a healthy nurse, with a good breast of milk, should be procured for the child, if it will suck. When it will not, food of a highly nutritious nature must be substituted, such as arrow-root, crumbs of bread, rice, &c. boiled up in good broths made from mutton, veal, or beef.

Flannel should be worn next to the skin, and the feet be enveloped in worsted stockings. In short, every precaution should be

taken against the irregular, or improper application of cold. It may be of service to put the child into a warm bath twice or thrice a week, of the temperature of from 90 to 100 of Fahrenheit. Pure air, regular exercise, and moderate frictions with the hand over every part of the body, but more particularly the stomach and belly, may be regarded as useful auxiliary remedies."

CROUP.

"THE Croup begins with shivering and other symptoms of fever, which, when the child is old enough, can be very well described by him; but in infancy, we discover them by thirst, restlessness, starting, hot skin, and a tendency to vomit. Along with these symptoms, but sometimes for a day or two preceding them, the child has a dry hoarse cough. In some cases, the attack is very sudden, the previous indisposition being short and scarcely observable. The local disease manifests itself by a difficulty of breathing, attended with a wheezing noise; the voice is shrill, the cough is of a very peculiar sound, somewhat resembling the barking of a little dog; others describe it as resembling a cough sounding through a trumpet. It is not uncommon for vomiting to attend this cough in the early stage. The pulse from the first is frequent, the patient is restless and anxious, and the face flushed, the eyes often watery and inflamed, and the mouth frequently filled with viscid saliva or phlegm.

From the nature of the disease, blood-letting has been with most practitioners a favorite remedy, and, doubtless, has of itself cured the complaint. In the commencement of the disease, delecting blood, especially if followed up by an emetic, will usually be found of great service; but it ought not to be trusted to alone. If possible, the blood should be taken by opening a vein; but if this cannot be done, leeches must be applied to the throat, but they are not equal to venesection.

Emetics have been greatly recommended by some, whilst others have little faith in their utility. I have sometimes observed great benefit from them, if employed very early; and would advise them to be given in every instance. Even in the advanced stage of the disease, emetics do much service, appearing mechanically to remove the lymphatic membrane. Decoction of seneka, and preparation of squills, have been used to assist the expectoration of the membrane, but they do not equal emetics for this purpose.

Blisters applied to the throat are useful remedies, and should not be neglected. The warm bath is also of service.

Calomel would appear to be a most powerful remedy in this disease, and, if given early, it will most frequently save the child. I do not, however, recommend it to the exclusion of other remedies, with which it is by no means incompatible. The early detraction of the blood, followed by an emetic, and the subsequent use of calomel, will afford the greatest hope of removing the disease. But I think it my duty to state, that in some cases no alleviation was obtained by any remedy but the calomel; and in others, it was trusted to alone, and with success. To an infant of six months, two grains and a half may be given every hour, until it purge freely; to a child a year old, five grains; and to one of two years, sometimes even ten grains are given every hour, until the bowels are acted on, and the child purges freely, or vomits repeatedly. The stools are generally green in color, and their discharge is usually accompanied with an alleviation of the symptoms. When this is observed, the dose must be repeated less frequently, perhaps only once in two hours for some time, then still seldomer, and finally abandoned. It is astonishing how great a quantity of calomel is sometimes taken in a short time, without affecting the bowels, or purging violently afterwards. Occasionally above one hundred, and often, fifty or sixty grains, are given in this disease. Salivation is not produced in children.

Calomel has been combined with ipecac. to produce vomiting, but I cannot satisfy myself that I have ever seen this combination do more good than either of the medicines would have done singly.

Spasmodic croup, or acute asthma, is often, but not necessarily connected with inflammatory croup. The spasmodic croup attacks children chiefly, but it may also affect women, especially about the age of puberty, and harass them occasionally for many years afterwards. It makes its attack very suddenly, generally at night, and sometimes for many nights in succession, especially if the child be agitated, or the mind of the young woman be anxious respecting it. The patient breathes with difficulty, and with a wheezing sound, has a hard barking cough, with paroxysms of suffocation, as in inflammatory croup. The extremities become cold, the pulse during the struggle is frequent, but in the remission it is slower; and if the remission be great, it becomes natural, unless kept up by agitation. There is little or no viscid phlegm in the mouth, no drowsiness, but rather terror, and the eye stares

wildly during the paroxysm. The disease is often suddenly relieved by sneezing, vomiting, or eructation.

Dr. Chapman says:—"My mode of treating this disease is as follows. I begin by endeavoring to puke the child very freely, and for this purpose, I commonly employ the tartarized antimony, given at short intervals, as being one of the most certain and powerful of the emetics. At the same time I direct the child to be put into the warm bath for ten or fifteen minutes. This is a useful remedy. It rarely fails to promote the operation of the emetic, and will, indeed, alone, sometimes cure the disease. If, however, the emetic does not operate, or if after its operation, the anticipated effect be not realized, I then bleed copiously, and repeat the bath and the emetic. The attack must be extremely obstinate if it do not now yield. Nevertheless, it will occasionally continue with little or no abatement. Under these circumstances, I resort to topical bleeding either by leeches, or by cups, and afterwards, if necessary, apply a blister, or sinapism of mustard to the throat, extending from ear to ear. If the preceding remedies fail, or the symptoms be so alarmingly violent as to demand immediate relief, I bleed.

When pushed to this extent, I may almost say that blood-letting in these cases is invariably successful. I learned this practice from two of the most distinguished physicians of our country, who seem to have employed it nearly about the same time. I allude to Dr. Belville of Trenton, and Dr. Dick of Alexandria. After the force of the disease is broken, which is shown by the alleviation of the hoarseness, and of the difficult respiration, and above all by the restoration of the natural susceptibility of the system to the action of medicine, I administer calomel, not in small and repeated doses as is more generally advised, but in the largest possible dose, in order that it may speedily and most actively purge. In this particular stage of the disease, a thorough opening of the bowels carries off the lingering symptoms, obviates a relapse, and confirms the convalescence. But if cough, or hoarseness, with tightness of the chest and deficient expectoration remain, I employ the decoction of the polygala senega as an *expectorant*. It is in extinguishing the remains of croup that it displays, I think, its best properties. Doubtless, however, it may be used at an earlier period of the disease with advantage as an emetic. But still I prefer the emetic tartar. I have recently heard that croup has been very successfully treated by a watery solution of corrosive sublimate, by large quantities of melted lard or olive oil

given internally, and by common mustard in the state in which it is used at our tables. Of the latter, a tea-spoonful is given to a child, to be repeated if required. Its operation in spasmodic croup, especially, is represented to be most decisively useful. I have not tried, nor am I disposed to try any one of these remedies. They each come to me, however, recommended by very respectable authority. With the remedies already known to me I rest satisfied. These in my practice have rendered croup the most curable of all the violent infantile diseases.”

COSTIVENESS.

“COSTIVENESS is natural to some children—acquired by others. In the former case, it often happens, that the mother is often of the same habit, and in these circumstances, we find that less detriment accrues than in the other; yet even here it is necessary to prevent the costiveness from increasing, as it may excite not only colic, but more serious diseases, such as convulsions, or diseases in the bowels. Some children, of a very irritable habit have the rectum spasmodically affected at times, on passing the fæces, which may be followed by a convulsion. This being frequently repeated, the child becomes afraid to go to stool, and retains the fæces as long as possible, which induces a costive state. Sometimes the terror is so great, that the child can only be made to pass the fæces when half asleep.

In hereditary costiveness, it is difficult, if not impossible, to induce a regular state of the bowels; and perhaps in some cases, this, if it could be done, would, seeing that it is not natural to the constitution, be injurious to the child. But we must beware, lest, by indulgence, this habit increase. Whenever the child is pale and puny, or dull, and does not thrive, there is risk of convulsions or some severe disease being induced. At a more advanced period of childhood chorea may be produced. Acquired costiveness may be overcome by medicine, and encouraging regular attempts to procure a stool. A variety of means have been employed in these cases, such as suppositories, magnesia, and other laxatives. The best remedy for changing the state of the bowels seems to be calomel, which may be given in a suitable dose, even to an infant, for a day or two in succession, and then omitted; employing in the interim a little manna alone, or combined with castor oil, and sometimes magnesia may be substituted for a change. In more

obstinate cases, infusion of senna, or two or three grains of aloes may be given. A quarter of a grain of ipecac. mixed with sugar, may also be tried. It is also proper to change the nurse, or alter the diet of the child, giving barley-meal porridge, veal soup, or rye mush and molasses, which is easily procured in every family, and may answer the purpose better than any of the enumerated articles."

COLIC.

"COLIC is a frequent complaint with children, especially when they are costive. It is often produced by too much food, exposure to cold, irregularities in the diet of the nurse, or some bad quality of her milk. It makes its attack suddenly, and is known by violent screaming, induced without any warning, and accompanied with hardness of the abdominal muscles, kicking and drawing up of the legs, and often suppression of urine. These symptoms are soon removed by a clyster or suppository, which brings away both fæces and wind. The warm bath, fomentations, and friction on the belly with anodyne balsam or laudanum, will be serviceable: and if the pain continue, two or three drops of tincture of opium, or a rather larger dose of tincture of hyoseyamas, with oil of anise, may be given. When the child is costive, a laxative is to be exhibited after the anodyne.

If the child be subject to repeated attack of colic, a few drops of tincture of asafætida are useful, and we must always take care to prevent the long continuance of pain, as it may end either in visceral inflammation or convulsions."

FEVER.

"Fever is a frequent disease in infancy and childhood, but it is generally symptomatic, or produced by some local irritation. Typhus fever is extremely rare in infancy, but it sometimes is communicated to children a few years old. It is known by our evidently tracing the channel of infection. The child at first is languid, pale, chilly, and debilitated, the appetite is lost, the head becomes painful, the skin hot, the tongue foul, the eye dull, or suffused, and the pulse very quick; and if a favorable crisis be not procured, great oppression, succeeded by stupor, precedes death.

In the course of the disease, the bowels are generally bound, the stools foetid, and the urine thick. It requires the early use of emetics in the cold stage, succeeded by saline julap. If the hot stage, however, be fully established, and the heat considerable, the affusion will be of advantage, succeeded by calomel purges and saline julap, with light diet, and the use of ripe fruit. A free circulation of air is of essential benefit. The skin, in the course of the disease, especially among the poor, should be spunged daily with tepid water, and the bed-clothes, if possible, changed frequently. If the head be very painful in the first stage, the use of laxatives will be useful. If pain continue, or stupor, or constant drowsiness supervene, blisters will be proper.

It is generally proper to begin the treatment of this disease, on its first attack, with an emetic, which is to be followed with a purgative. In some cases, the usual dose of the purgative will prove effectual; but oftener a much larger quantity must be given. We cannot say what quantity may be necessary to procure stools. Usually it is greatly beyond what any one who has not seen much of this disease, would expect. Senna-tea answers the purpose very well; or if the child can swallow pills, the aloetic pills stay well on the stomach, and, if given in sufficient number, act excellently on the bowels. Clysters are also useful. It is useful to evacuate the bowels freely at first; but after this, it is not proper to give so much medicine as will purge briskly. It is requisite, however, to give regularly such doses as will keep the bowels open, and support their action. When the stools are loose, purgatives are still proper, in prudent doses, to evacuate them; for they are not natural in their appearance, and injure the action of the intestines. Suitable doses of calomel, or castor oil emulsion, or infusion of senna, or aloetic pills, will presently bring the stools into a more natural state. This is a very important part of our practice, but not the whole of it, for we know well, that removing the cause of fever does not always remove the fever itself. We should therefore, besides using laxatives early, and continuing their exhibition during the disease, as long as these bring away offensive stools, and do not increase the frequency of the pulse or debility, have recourse, in the commencement of the fever, to the use of the sponge, with cold water to moderate the heat. This is to be repeated oftener or seldomer, according to the benefit it produces. If the first application gives much relief, we may even employ the affusion of cold water prudently, immediately after the hot stage is established, and then it may abate the fever. Afterwards we em-

ploy saline julap, with a little antimonial wine, and, in the more advanced stage support the strength with regular and cautiously proportioned doses of wine. Opium and hyoscyamus frequently allay irritation, and accelerate recovery, by procuring sleep. Anodyne clysters are useful in this respect, and also for abating griping or abdominal pain. This also is relieved by fomentations. Pain in the side, if not abated by rubbing with anodyne balsam, requires a small blister. Delirium is sometimes, but not always, mitigated by blistering the head; but this is uniformly proper when there is considerable delirium, or any pain in the head. Shaving the head, and merely washing it with vinegar, has also a good effect. The diet should be light, but it is not proper to force the patient to eat. In the progress of the disease, infusion of bark or other tonics are sometimes beneficial. Great attention should be paid to cleanliness and ventilation, and, when convalescent, a removal to the country is highly useful."

INFLAMMATION OF LUNGS, PLEURA AND STOMACH.

"Bronchitis is far from being an uncommon disease of infants. It sometimes takes place very early after birth; in other instances not for several weeks. It begins with cough and pretty copious secretion of mucus or phlegm, which, however, the child will not allow to come out of the mouth, but swallows. The cough is frequent, but not uniformly so, coming on in paroxysms. It is of stifled sound, and somewhat hoarse, or occasionally even shrill, from slight inflammation at the top of the wind-pipe. The breathing is oppressed or sonorous, but not permanently so. Vomiting is also not an uncommon attendant, and the stools are generally green and offensive. The child takes the breast pretty freely, but dislikes all meat.

This is a very obstinate disease, but it does not prove very rapidly fatal. In the commencement it resembles common catarrh, and requires the same treatment. At different stages, and under various circumstances, I have tried emetics, blisters, calomel, and expectorants, but without decided benefit. Blisters, with calomel, combined with ipecac., to act both on the bowels, and also as an expectorant, together with a removal to the country, appear to constitute the best practice.

Inflammation of the pleura is more frequent with children than many suppose. The skin is very hot, the face flushed, the pulse

quick, the breathing short and oppressed; there is a cough, aggravated by crying, by motion, and by laying the child down in bed. He is likewise more disposed to cough, and is more uneasy on the one side than the other. If not relieved soon, the breathing becomes laborious, the extremities cold, the cough stifling, with rattling in the throat and stupor; or the pulse becomes irregular and intermittent, the extremities swell, the countenance is sallow and dark colored, the breathing difficult, with short cough, and frothy expectoration, which oozes from the mouth. This disease requires venesection, according to the age and constitution of the child; the use of blisters, calomel, purges, and the tepid bath. Antimonials are also sometimes of service. In the last stage, diuretics are proper, especially a combination of squills and digitalis, whilst the strength is to be supported by the breast-milk, or light diet.

Inflammation of the stomach is not a common disease of infancy, nor is it discovered without considerable attention. There is great fever, frequent vomiting, the mildest fluid being rejected soon after it is swallowed, the throat is first inflamed, and then covered with aphthæ, which spread to the mouth. The child cries much. The region of the stomach is full and very tender to the touch. The bowels are generally loose. If the child be old enough to describe his sensations, he complains of heat or burning about the stomach and throat; if younger, he directs the hand frequently to the stomach and breast. There is sometimes, from the first, a cough and short breathing, but the constant vomiting shows the disease to be in the stomach. It is proper immediately to apply leeches to the pit of the stomach, according to the age and strength of the child; then a blister is to be applied, and stools are to be procured by calomel. Fomentations, and the warm bath, are also useful. M. Saillant recommends the juice of lettuce, to be given in spoonfuls every hour, but I do not know any advantage this can have over mucilage and laxatives. The disease is uncommon, but when it does occur, is apt to be mistaken for a disordered state of the stomach and bowels, producing aphthæ."

CATARRH.

"INFANTS are subject, as in after life, to catarrh, either common or epidemic. It is attended with fever and inquietude, redness of the cheeks, watery discharge from the eyes and nostrils, disposition to sleep, frequent, and sometimes irregular pulse, panting and

shortness of breathing, with frequent cough, which, however, is not severe. It generally goes off within a week, by the use of gentle purges, blisters, antimonials, and, if the fever be considerable, leeches applied to the breast. A hoarse barking cough, is cured by an emetic, and wearing flannel round the throat."

COLD-BATHING.

THE cold bath, at the temperature of sixty-five degrees, is that, which, in this country, is most generally employed.

Immersion in cold water is a custom which lays claim to the most remote antiquity. Indeed, it must have been coeval with man himself. The necessity of water for the purpose of cleanliness, and the pleasure arising from its application to the body in hot countries, must very early have recommended it to the human species. Even the example of other animals was sufficient to give the hint to man. By instinct, many of them are led to apply cold water in this manner; and some, when deprived of its use, have been known to languish, and even to die. But whether the practice of cold-bathing arose from necessity, reasoning, or imitation, is an enquiry of little consequence: our business is to point out the advantages which may be derived from it, when judiciously resorted to, and the danger attending its improper use.

People are apt to imagine that the simple element of water can do no hurt, and that they may plunge into it at any time with impunity. In this, however, they are much mistaken. I have known apoplexies occasioned by going into the cold bath,—fevers excited by staying too long in it,—and other maladies so much aggravated by its continued use as to become absolutely incurable. Without a proper discrimination with regard to the disease and the constitution of the patient, the most powerful medicine is more likely to do harm than good. The physician, who cured Augustus by cold-bathing, killed his heir by the very same prescription. This induced the Roman senate to make laws for regulating the baths, and preventing the numerous evils which arose from an imprudent and promiscuous use of those elegant and fashionable pieces of luxury. But as no such laws exist in this country, *every one does that which is right in his own eyes*, and of course many must do wrong. I hope, however, that when better informed, they will learn to correct errors of so fatal a tendency.

Absurd prejudices against cold-bathing are not less blameable on the other hand. Though it should never be prescribed for *the cure of diseases*, without well considering the nature of each case, it cannot be too earnestly or too generally recommended as *a preservative of health*. I am, therefore, sorry to see some modern writers attempting to revive the whimsical and long exploded doctrine of Galen, who said, that immersion in cold water was fit only for the young of lions and bears; and that warm-bathing was conducive to the growth and strength of infants. How egregiously do the greatest men err, whenever they lose sight of facts, and substitute sallies of wit or specious arguments in physic for observations and experience! By these the superior excellence of the cold-bath is placed beyond the possibility of a doubt. Its tonic powers are found to be peculiarly proper for the lax fibres of young people, rendering them firm and elastic, and enabling the vital organs to perform their respective functions with ease and regularity.

In other parts of this work, I had occasion to describe with greater minuteness than is now necessary, the many good effects of washing children; and I gave a few directions as to the manner of employing this very salutary operation, from the moment of their birth. I showed how the use of the cold bath might be gradually brought about with the utmost safety; and I am persuaded that those who give it a fair trial will readily comply with my farther advice to continue it ever after, except in such cases of indisposition or infirmity as I shall presently notice. Nothing contributes more to the growth, vigor, and firmness of youth, or to the activity and permanent health of manhood, than daily immersion in cold water. It steels the frame against changes of weather, against the impressions of cold or moisture, and many other external injuries. It is of course the best preventive of all those diseases which arise from a relaxed skin, obstructed or profuse perspiration, and nervous weakness.

When the cold bath is used merely as a means of preserving health, in which point of view I am now considering it, a single plunge or dip of the whole body will be sufficient, though active swimmers may continue their favorite amusement for five or six minutes without injury. Any longer stay might prove dangerous, by not only occasioning a strong determination of blood to the head, but chilling the vital fluid, cramping the muscles, relaxing the nerves, and wholly defeating the intention of bathing. For want of a due regard to these circumstances, young men have of-

men endangered, and sometimes lost their lives. In all cases, it is highly necessary to be rubbed dry at the instant of coming out of the water, and to take exercise for at least half an hour after. A little exercise is also advisable before bathing, so as to excite a gentle glow or temperate degree of warmth, and thus guard against the bad consequences of a too sudden shock, when the body is either chilly or overheated.

The like caution should be given against plunging into cold water after dinner, or after much fatigue. For these and many other reasons, the morning is very properly recommended to persons in health as the best time for bathing. It is the least likely to interfere with their other pursuits or concerns: it washes away any particles of the perspirable matter that may have remained on the surface of the skin, before they can be re-absorbed; it affords fresh supplies of vigor and alacrity, to enter upon the duties of the day; and, as I have already hinted, it fortifies the body against any changes of weather to which it may be afterwards exposed in a far lighter element.

In a state of perfect health, it may be further observed, that people need not give themselves much trouble to enjoy the advantages of sea-bathing in preference to river-water, as the grand effect of both is nearly the same, though some considerations of less moment may concur to render the former more inviting. Among these we must reckon the usual resort of gay company to different parts of the coast in summer, the refreshing coolness of the sea-air in that season, and the agreeable stimulus which many persons experience from the action of saline particles, not only in the water, but when they are floating in the atmosphere. It should also be considered, that the temperature of the sea is more uniform than that of rivers, never rising so high, or sinking so low, in any change of weather. But such points of difference are chiefly interesting to valetudinarians.

What I have said of the cold bath, when used as the means of preventing disease, will throw some light on the propriety of occasionally resorting to it as an important remedy. In cases of peculiar delicacy and danger, it is an instrument which can only be entrusted to the most skilful hands; but in many other less critical situations, a few plain rules may be of considerable service.

The first object to be attended to in the use of the cold bath, as a remedy, is, whether the patient is not too much enfeebled to bear the shock. This cannot always be determined by appearances; but a single experiment will remove all doubt. If the immersion

be followed by a pleasant glow, and a sense of increasing alacrity, it is the best proof of its agreeing with the constitution, and of its being likely to have a happy influence on the whole frame. Hence the cold bath is found to be an excellent bracer and restorative in cases of languor, of habitual lassitude, and of muscular or nervous weakness, when arising from much confinement, a sedentary life, intense study, or any of the usual causes of relaxation. But it is always understood, that, in every instance of this sort, a sufficient strength of original stamina still remains to produce a proper reaction of the heart and arteries, upon which all the salutary effects of bathing depend.

The great efficacy of the cold bath, and particularly of sea-bathing, has often been experienced in scrofulous complaints, which are always attended with a relaxation of the fibres, and a strong disposition to languor and indolence. In such cases, sea-bathing is not only recommended as a tonic, or bracer, but as a powerful detergent and purifier also, especially if the sea-water be used internally at the same time. No difference of opinion prevails on this head, as far as it relates to the scrofula, but it has been alleged, that sea-bathing, though a good preventive of the scrofula, could not remove the local effects of the disease when once formed. My own practice in the treatment of scrofulous affections has not been extensive enough to enable me to speak to this point with a tone of confidence; but the contrary doctrine appears to me supported by the fairest reasoning, and, what is more, by indisputable facts.

In the first place, a weak flaccid habit, and a thin skin, very susceptible of impressions from cold moist air, are the principal, if not the only predisposing causes of the scrofula. Now the cold bath is the best remedy for both, as it renders the texture of the skin firm, and invigorates the system. By being therefore so well adapted to obviate causes, it must, according to one of the surest maxims of medical practice, be very fit to remove effects.

The justness of such an inference has been placed beyond a doubt, by the reports of men of professional eminence and veracity, under whose direction, and immediate inspection also, sea-bathing has been known to resolve swellings of the glands, as well as to correct the discharge of scrofulous ulcers, and to dispose them to heal. I am therefore very willing to believe, that a regular course of sea-bathing, and the internal use of sea-water, with the aid of good air, proper exercise, and a light, yet nourishing diet, are the

best means hitherto discovered for checking the progress of the evil, or counteracting its morbid effects.

But, in order to prevent any possible misconception of my meaning, it may be necessary to add, that my opinion of the efficacy of sea-water in scrofulous complaints, is confined to its probable removal of the *outward symptoms* of the malady, *before these have arrived at a certain pitch*, or, *have reduced the patient to a state of extreme debility*: in which case, as well as in all *internal affections* of the scrofula, when it has once fastened upon the lungs, or any other vital part, bathing in the sea, or drinking its waters, would be not only useless, but extremely injurious.

It would also imply too great a confidence in the salutary virtues of sea-bathing, to prescribe it as a remedy for cutaneous disorders in general. To many of them the warm-bath is much better adapted; and the proper choice of the one or the other can only be determined by a skilful physician, after a due consideration of the patient's case. Some eruptions, if imprudently repelled by the action of cold on the skin, may carry back into the habit the seeds of disease, to be deposited, perhaps, on some vital part, in spite of Nature's kind efforts to throw them off. But a medical man will not prescribe sea-bathing in any case where pimples or blotches appear on the surface, without recommending the internal use of the sea-water at the same time, to determine regularly and moderately to the bowels, so as to carry off all impurities, without the least injury to the general health, spirits, or appetite. I shall have occasion to repeat this caution, when I come to speak of some mineral waters, which are frequently resorted to for the cure of similar complaints.

Though, as before observed, there may be very little difference between the effects of sea-water, and of river-water of the same temperature, when applied to a sound skin and healthy body, yet the gently stimulant, detergent, and healing properties of the saline impregnation of the former must give it a decisive superiority in many diseases of the surface and habit. It cleanses sores, and forwards the progress of granulation. It often disperses tumors that have resisted the most powerful discutient medicines. Even deeply-seated ulcers, though beyond the reach of other applications, sometimes yield to the penetrating action of sea-water. We must not forget, however, that its internal use is a necessary auxiliary in all these cases, and others of a similar nature. About half a pint of it, which contains somewhat more than a quarter of an ounce of salts, taken in the morning, immediately on coming

out of the sea, and the like dose in half an hour after, will commonly answer the purpose of a mild purgative. The quantity may be augmented, or the dose repeated, if requisite, with perfect safety and little inconvenience. It excites thirst, but seldom nausea, unless the stomach is very irritable, or the patient very squeamish.

In chronic diseases, where a cure cannot be expected but from the long-continued use of any remedy, it is a great recommendation of the sea-water, that it may be persevered in for a considerable time, without weakening the stomach, the intestines, or the constitution in general. Instances frequently occur of persons who keep the body moderately open by its daily use for months together, and yet enjoy during the whole time a good appetite, and excellent powers of digestion, with increased vigor both of body and mind. It is always most advisable to make use of the sea-water externally and internally, in the manner here directed, only twice or three times a-week, till the patient is encouraged by degrees to employ the salutary process every day. It should also be gradually discontinued in the same manner, after the desired end is obtained.

There are several disorders, besides those already mentioned, particularly ardent fevers, and various cases of local inflammation and muscular rigidity, in which the external application of cold water may produce good effects. But many of them require great accuracy of distinction, as well as the utmost judgment and caution in the use of a remedy, which a small mistake, or a small change of circumstances, may render hazardous. In a work like this, designed for popular instruction, it would be improper to encourage rash experiments, by pointing out such niceties in medical practice as are safe only when under the guidance of medical skill. I do not know any thing in its own nature so salutary, and yet so liable to be abused, as the cold bath. I shall therefore proceed to touch upon the cases, where the inconsiderate or improper application of such a remedy may prove injurious, and sometimes fatal.

It is not merely in the critical cases just alluded to, but in many slighter indispositions, that injudicious immersion in cold water may be attended with very serious consequences. Fevers are much oftener produced than cured by cold-bathing, if rashly resorted to. Disorders of the intellectual functions, palsies, apoplexies, and death, may be, and are frequently occasioned by a single dip, in cases either of *extreme nervous debility* or of *extreme fulness*. When I reflect on the frantic precipitancy with which I

have seen many persons of very weak, and others of very plethoric habit, after a rapid journey from London to some watering-place, plunge instantly into the sea, without the least preparation, so far from being surprised at the numbers who suffer, I am rather astonished that any should escape. In order to prevent the ignorant and the thoughtless from falling victims to their indiscretion, and to guard persons afflicted with particular complaints against the use of an improper medicine, I shall point out the principal indispositions, in which the cold-bath would be likely to aggravate the symptoms, and even to endanger the life of the patient.

EFFECTS OF COLD-BATHING.—When a person in the ordinary state of health is immersed in a cold-bath, he first experiences a general sensation of cold, which is almost immediately succeeded by a general sensation of warmth, the latter rapidly increasing, so as to cause the surrounding water to feel of an agreeable temperature. If the immersion has been sudden and momentary, and the body be immediately dried and covered from the air, the agreeable sensation of warmth continues, the whole body feels refreshed and invigorated, and, under favorable circumstances, the natural perspiration is increased. If, however, the immersion be continued for a considerable time, and the water be not at the highest range of the temperature assigned to the cold-bath, the sensation of warmth goes off, and is followed by numbness and shivering, the skin becomes pale and contracted, the vessels near the surface of the body are evidently diminished in diameter, and the blood which flows through them is drawn towards the internal parts; the person feels drowsy and inactive, his joints become rigid and inflexible, his limbs are affected with pain and cramps, his respiration becomes quick and irregular, his pulse low and small, and his perspiration suppressed. If the immersion be still continued, or if the water be very cold, the pulse gradually ceases, the action of the heart becomes weak and languid, a sensation of faintness and coldness of the stomach is experienced, followed by a rapid diminution of the whole animal heat; the vital energy at length becomes exhausted, and death ultimately ensues.

In the preceding description, it is supposed that the body has been suddenly plunged into the water; if, as it often happens with weak or timid people, the bather enters the bath slowly, or if the water is much below sixty degrees, the sensation of cold is more striking, a shivering is produced, and as the person advances so as to make the water rise towards the belly and chest, a shuddering

and convulsive sobbing takes place, sometimes attended with sickness and head-ache.

CAUTIONS TO BE OBSERVED, &c.—When, therefore, cold-bathing occasions chillness, loss of appetite, listlessness, pain of the breast or bowels, a prostration of strength, or violent head-aches, it ought to be discontinued. These unpleasant sensations are the surest proofs, that the actual state of the patient's habit is unfit to bear the shock; and that either the re-action of the heart and arteries is too weak to overcome the cold pressure on the surface, or that the determination to the head, or to some other vital part, is too rapidly increased. Every body's feelings, after immersion in cold water, are the best criterion by which we can decide on the probability of its good or its bad effects. We might otherwise be deceived by appearances, and be induced to recommend the cold-bath in all cases that might seem to require a tonic and stimulant plan of cure.

But it may sometimes be dangerous, or at least very detrimental, to make even a single experiment. In particular affections of the stomach and bowels, as well as in diseases of the lungs or of the brain, and all obstinate obstructions, the effect may be fatal. The late Dr. SMOLLET, indeed, said, that if he were persuaded he had an ulcer in the lungs, he would jump into the cold bath. In doing so, however, the Doctor would certainly show more courage than discretion; and that he was more a man of wit than a physician, every one will allow. A nervous asthma, or an atrophy, may be mistaken for a pulmonary consumption: yet, in the two former, the cold bath proves often beneficial, though I never knew it so in the latter. Indeed, all the phthisical patients I ever saw, who had tried the cold bath, were evidently hurt by it.

Persons of very full habits, as I have already hinted, run a great risk of bursting a blood vessel, or of causing an inflammation of some important organ, by rushing into the cold bath, without due preparation. People of this description ought by no means to bathe, unless the body has been previously prepared by suitable evacuations. They will then derive the utmost benefit from what might be otherwise attended with irreparable injury to many of them.

Though I recommend the cold-bath in cases of nervous weakness, yet *the degree* of that weakness should be considered, lest the shock might prove too powerful for extreme debility. Not only

women of very weakly and delicate habits, but men also in the same predicament, as well as puny children, should begin with the warm-bath, at the same degree nearly as that of animal heat, about 96° of Fahrenheit's thermometer; and reduce it gradually in proportion to the increase of the patient's strength and internal powers of re-action. The cold bath is often very necessary to complete a cure, though not always advisable to begin with. This requires particular illustration.

In hysteric and hypochondriac cases, cold-bathing at first has done the greatest mischief, though it may be finally resorted to with good effect, after a preparatory and long continued use of the tepid or lukewarm bath. Its warmth must be diminished very slowly, and almost imperceptibly. Nature revolts against all great transitions; and those who do violence to her dictates, have often cause to repent of their temerity.

The like gradual diminution of the temperature of the water is no less proper in rheumatic complaints, and in those muscular contractions and convulsive motions which are called *St. Vitus's Dance*.

Indeed, it may be laid down as a pretty general rule in that branch of nervous disorders which includes spasms, convulsions, epilepsies, and similar consequences of the debility or irritability of the system, that we should always begin with the warm-bath, and proceed to the cold by the most pleasing and gentle gradations.

The chief exceptions to this rule occur in the treatment of spasmodic affections of the intestines, whooping coughs, and convulsive asthmas, in which, though classed under the general head of spasms, the cold-bath would at any time be extremely improper. But this prohibition is also implied in my remark on complaints of the bowels and chest in general, the latter including coughs of every description. When these are the mere consequences of slight irritation, or cold, bathing the lower extremities in warm water affords great relief; but immersing the whole body in either the warm or the cold bath, would only aggravate the symptoms, when the breathing is difficult.

As palsies are often occasioned by the inconsiderate use of the cold-bath, it cannot be too strictly prohibited, where any paralytic symptoms are discoverable. There is no complaint that bears and requires a greater degree of external heat than the palsy, and there is none in which the shock of cold water is more directly opposite

to every curative indication. The hot-baths, therefore, whether natural or artificial, and particularly if impregnated with salt, which increases their stimulus, are employed as a sovereign remedy for paralytic affections. Friction, which should never be neglected after bathing, is in these cases of eminent service.

In affections of the nervous coat of the stomach, and in cases of indigestion, especially when occasioned by intemperance, cold-bathing is as improper as in complaints of the bowels, before taken notice of. But it is the excess of folly, after immoderate drinking, to use the cold-bath with a view of alleviating its painful effects next day. It must increase the disorder of the stomach, the violence of the head-ache, and the derangement of the circulation. It may be productive of still worse consequences. The cooling operation may prove far more powerful and more lasting than was expected, and may extinguish forever the remains of animal heat; or, should nature, by extraordinary efforts, be able to resist the shock, it would probably be attended with symptoms of fever, or with very troublesome eruptions. Many painful affections of the head, as well as those which arise from intoxication, are, indeed, often relieved by what is called the *shower-bath*, or by the affusion of cold water on the part affected, but never by the rash experiment of swimming, or of total immersion.

I must take this opportunity to add, that the *shower-bath* is in many other respects a valuable contrivance. It may be easily procured: its actions can be regulated at pleasure; and as the water descends like rain, it gently impels the blood towards the lower extremities, and prevents the danger which would arise from its sudden or too rapid determination to the lungs and head in some of the cases already mentioned.

In uterine hæmorrhages, and other fluxes of blood, when so considerable as to endanger the patient's life or constitution, cold water may be applied with good effect. It also forms a part of the tonic plan to be pursued in an immoderate flow of the *menses*: nor is any thing more likely to prevent the return of this complaint than cold-bathing or drinking chalybeate waters in the intervals of menstruation. But when the discharge of blood is critical, as in some affections of the brain, lungs, &c. or is become habitual, as in the piles, to check so salutary an evacuation by the use of the cold-bath would be the height of madness. This is no less true of many critical inflammations, those of the gout for instance, in which cold water or any other repellent would evidently counter-

act the purposes of nature, and very probably throw the disorder upon some vital part. What is called the *retrocedent* gout frequently arises from some mismanagement of this sort, as well as from some particular weakness or atony of the system. Cold-bathing is a very hazardous experiment to be made by persons subject to the gout, except in the absence of the symptoms, when no indisposition is felt in either the head or stomach, when the extremities are not threatened with pain; and then only in concurrence with the best medical advice.

Bathing the lower extremities in warm water is generally and very properly recommended both in the retention and suppression of the *menses*, to excite the action of the uterine vessels, and, in the latter case, to remove any stricture of those vessels which may be induced by cold or fear. A skilful physician, however, will sometimes meet with cases of a retention of the *menses* after the usual age, in which the cold-bath, if seasonably used at the beginning of the disease, may contribute to restore the tone of the system.

The delicacy and general irritability of the habit in a state of pregnancy, as well as the danger of too great a determination of the blood to the womb, clearly forbid the use of the cold-bath, unless it should be rendered advisable by some circumstances of a peculiar nature, of which a medical man of skill and experience is the only proper judge.

It is a great and often a fatal mistake to rely on the tonic powers of the cold bath as the best means of repairing the injury done to the constitution by the relaxing influence of hot climates. People, on their return to England, after having resided in the East or West Indies, would find the warm-bath not only safer, but far more conducive to the recovery of their former strength. I would not have them venture into a bath of a temperature under 90° for a considerable time, after which they may gradually diminish its warmth, as before recommended in cases of *extreme debility*.

I might here go into farther details, and show how much more salutary the warm-bath is than the cold in diseases of the liver and kidneys, and in numerous other cases of internal derangement; but the principles, which I have laid down, may be easily extended to them all; and I hope that the cautions I have given will operate as some check on the abuse of the most powerful means of preserving and restoring health, with which we are acquainted.

Some years ago a foreign quack made a great deal of noise in this country with his medicated baths, but, like other follies of the

day, they are now almost sunk into oblivion. A few writers have also been very lavish of their panegyrics on the wonderful effects of vapor-baths as used in Russia: but I do not think that the inhabitants of these milder regions will ever have occasion to envy the rigid fibres of the north the enjoyment of such fanciful luxuries. The strength of steam is, perhaps, better known and more usefully employed in England than any quarter of the globe; but we meet with very few cases, where its intense action on the surface of the human body can be deemed essentially necessary either for the prevention or the cure of diseases. Surely the skin of an Englishman may be rendered perspirable by a much gentler stimulus, and without the aid of so troublesome and suffocating a process.

MATERIA MEDICA.

NARCOTICS.—ANODYNES.

VERY erroneous ideas are entertained by most persons with regard to anodynes, for it is almost universally supposed, that opium is the only medicine which promotes sleep; which effect it is believed to produce by some specific property. But the truth is, opium, in every form, is a powerful diffusible stimulant, and unless the system be languid or reduced, or at least free from inflammatory action or fever, instead of promoting or procuring sleep, opium distracts the brain, and often produces delirium, or total inability to sleep. So that in all cases where there is considerable fever or fulness of habit, things, quite opposite in their nature from opium become anodyne, while opium will increase the excitement and have a directly opposite effect. In such cases, bleeding, purgatives, emetics, or cooling drinks, accommodated to the case, will induce sleep, by lowering febrile action. The same remarks are applicable to nearly every article of this class. Let it be remembered then, that the remedies which are reputed anodynes are stimulants, and are only applicable where there is neither acute inflammation nor febrile excitement. The foreign articles of this class are, *Opium* and its various preparations; *Digitalis*; *Belladonna*; *Hyosciamus*; *Nightshade*; *Hemlock*; *Nux Vomica*; and *Bitter Sweet*. The most valuable domestic anodynes are comprised in the following list.

JAMESTOWN WEED. (*Datura Stramonium*.)—This weed is well known in every part of the United States. It is a powerful narcotic. Every part of the plant is active. Large doses produce vertigo, delirium, dilatation of the pupils, tremors, nausea, headache, dryness of the throat, flushing of the face and body, vomiting and death. In smaller doses, there are suffusion of the eyes, convulsions, antic gestures, laughing, crying, &c. The eyes are sparkling. Children are frequently poisoned by swallowing the seed. In such cases, give emetics first, and after the ejection of the poison administer vegetable acids; then stimuli, as strong coffee, brandy toddy, &c.

This medicine was extolled by Baron Storch as a specific in mania. It has been used with advantage in epilepsy of a particular kind, and also in most chronic, painful diseases, as cancer, neuralgic affections, &c. It is also used locally by surgeons to dilate the pupil of the eye. The split roots, dried and smoked like tobacco, are useful in asthmatic affections. An ointment is made of the green leaves and lard, said to be good for irritable ulcers, and the discussion of piles. Doses—Extract of the seed, from one fourth to half a grain; powdered seed, half a grain; powdered leaves, one grain; tincture of the seed, from 15 to 20 drops.

CHERRY LAUREL. (*Prunus Lauro Cerasus.*)—This is a native of England, but grows in our country. The only preparation of it in common use is Prussic acid. The medicinal Prussic acid consists of one part of the acid to eight of water, of which the dose is from one to five drops, largely diluted. It is used in consumption, dyspepsia, locked-jaw, whooping-cough, &c. and as a wash in some diseases of the skin. It is a dangerous remedy out of the hands of a physician.

POISON-OAK. (*Rhus Toxicodendron.*)—In addition to its narcotic property, the poison-oak is a gentle laxative. It is used principally in palsy. The first favorable symptoms from its use are, twitches, prickling, or uneasiness in the palsied limb. Dose of the powdered leaf, from 1 to 10 grains three or four times a-day.

COMMON HOP. (*Humulus Lupulus.*)—The anodyne principle of the hop resides in the yellow powder of the female flowers, and is called *lupuline*. It is tonic as well as narcotic. It is best suited to diseases which require the long-continued use of narcotics, as it does not impair the tone of the stomach nor constipate. It is used in mania from drunkenness, and in nervous affections generally. A pillow of hops has been long known and justly esteemed as an excellent means of procuring sleep. Dose—of the yellow powder in substance, from 8 to 10 grains. Tea made by infusing the hops, may be taken at discretion until it has the desired effect, of procuring sleep or alleviation from pain.

GARDEN LETTUCE. (*Lactuca Sativa.*)—The inspissated juice of the common lettuce, called *lactucarium*, resembles opium in its effects, with these advantages, that it does not stimulate, nor does it produce constipation. It is a fine anodyne, and peculiarly adapted to children. Dose—from 2 to 6 grains for an adult, and in proportion for a child.

SPIDER'S WEB. (*Tela Araneorum.*)—This is the product of the large black spider, found in cellars. It is an excellent narcotic. It has been used with benefit in agues; and is said to prevent the chill, if given a short time prior to the period for its accession. Its exhibition should be premised by bleeding, emetics, and cathartics. It is also recommended in asthma. It increases muscular action in a high degree. Dose—of the web made into pills, from five to twenty grains.

ANTISPASMODICS.

THESE are medicines which possess the power of allaying inordinate muscular contraction, without inducing torpor or debility of the nervous system. The *modus operandi* of this class is little known, and little can be known of it until the physiology of the nerves is better understood. Spasms, when often repeated, become habitual, and recur from slight causes. Stammering and the convulsive cough in the latter stages of whooping-cough, are habitual, irregular actions. There is also a proneness to imitation of spasmodic action exemplified in hysteria, chorea, &c.

They are much under the control of the mind, and have been cured by sudden terror. Spasm is sometimes the result of plethora, sometimes of debility, and not unfrequently of derangement of the digestive organs. These different causes indicate variety of treatment: If from derangement of the stomach and bowels, emetics and cathartics will relieve it, and they thus become, indirectly, antispasmodics—and so do various other articles. Antispasmodics differ from narcotics in not producing insensibility. They are obtained from each of the three kingdoms of nature. Among the most prominent agents of this class, are *Musk*; *Assafetida*; *Galbanum*; *Gum Ammoniac*; *Valerian*; *Castor*; *Oil of Amber*, and *Sulphuric Ether*. The following are indigenous to the United States.

GARLIC. (*Allium Sativum*.)—All the alliaceous tribe are medicinal, but garlic is by far the most active and valuable. It is given in croup, whooping-cough, and breast complaints of children generally. Advantage is frequently derived from rubbing the breast and spine with a spirituous infusion of garlic. It may be given freely to drunkards for stomachic debility. It is very stimulating, and its use is interdicted in diseases of an inflammatory character generally. The expressed juice, or the clove in substance, may be given as circumstances dictate.

SKUNK CABBAGE. (*Simplocarpus Fœtida*.)—This is a common indigenous plant, which has received its name from having an odor like the skunk or pole-cat. It is recommended as exceedingly useful in the paroxysm of asthma, in spasmodic coughs, in hysteria, whooping-cough, chronic rheumatism, &c. The root and the seeds are the only parts used. Of the powder of the root 30 or 40 grains is the dose—and of the seeds about half the quantity.

HORSE MINT. (*Monarda Punctata*.)—This plant grows abundantly in various parts of the United States. Dr. Chapman says, "An infusion of the recent or dried leaves has been for some time employed to allay nausea, or check vomiting, and was the common remedy, for these purposes, especially in bilious fevers, of the late Dr. Kuhn. He also thought well of it as an antilithic, and freely used it in ordinary strangury from blisters, &c. As an emmenagogue, he concurred in the popular notion as to its virtues—placing it on a footing with rosemary, pennyroyal, and similar articles." By distillation it yields a volatile oil, which is exceedingly irritating when applied to the tongue or skin. It is very useful as an antispasmodic or carminative in flatulent colic, in spasms of the stomach, in the gout in the stomach, and in the hiccough of low fevers, and similar affections.

TONICS.

TONICS are those medicines by the long continued use of which, vigor and health are imparted to the system. Strictly speaking, every thing is a tonic which imparts vigor; but in medical parlance the term is re-

stricted to those articles that correct debility. Exercise and diet may be called tonics, as they give vigor to the system. All medicines having the bitter principle are tonic, unless there is some more powerful counteracting principle in combination with it, as is the case in opium, digitalis, and alaterium.

Tonics are contra-indicated whenever there is a tendency to inflammation. They require much judgment in their administration; and when improperly used are productive of the worst consequences.

Those possessing the most reputation are *Iron*, and its various preparations; *Blue Vitriol*; the *Oxide* or *Flowers of Zinc*; *White Vitriol*; *Bismuth*; *Arsenic*; *Nitrate of Silver*; *Flowers of Sulphur*; and *Elixir Vitriol*, in the mineral kingdom;—and among foreign vegetables, the *Peruvian Bark*, or its preparations, the *extract* and *quinine*; *Columbo*; *Yellow Gentian*; *Quassia*; *Cascarilla Bark*; and *Myrrh*. Our own country is peculiarly rich in excellent indigenous articles of this class, and if proper attention were paid to them we should have little need of imported tonics.

DOGWOOD. (*Cornus Florida*.)—The bark of this tree possesses properties similar to those of the Peruvian bark. It is used in intermittent fever, and all the diseases to which the foreign bark is applicable. It possesses an active principle, called *Cornine*, which is thought, by those who have tested its virtues, to be little if at all inferior to quinine, when given in the same doses. The dose of the inner bark in substance is about that of the Peruvian bark. It should be gathered at least a year before it is used, as it is rather offensive to the stomach in the recent state. It is a common ingredient of most stomachic bitters, and is highly valued by those who have used it.

VIRGINIA SNAKEROOT. (*Aristolochia Serpentina*.)—This plant is indigenous to the United States only. The root is the only part used. Dr. Chapman says it possesses the mixed qualities of the stimulant and tonic. It is actively diaphoretic, and sometimes promotes the urinary secretion. It has been long used as an adjuvant in the cure of intermittent and remittent fevers, to the latter of which it seems peculiarly adapted, “having in many cases an indisputable superiority over Peruvian bark, inasmuch as it is rarely offensive to the stomach, and may be given in those obscure states of the disease, where the remission is not readily discernible. It is much employed in the secondary stages of pleurisy, after bleeding, for the purpose of exciting perspiration, and the result is said to be generally favorable. It has also been extensively used in bilious pleurisy for the same purpose, with desirable results. In such cases its use should be preceded by bloodletting and purgatives. An infusion of this root is also suited to check vomitings, and to tranquilize the stomach, especially in bilious cases. It may be given in powder or infusion, the dose of the former being 30 grains, and of the latter one or two wineglassfuls. It is less active in decoction, and when boiled for any length of time loses its virtues entirely.

BONESET or THOROUGHWORT. (*Eupatorium Perfoliatum*.)—This plant is more particularly *diaphoretic*, and will be treated of under that head. Its operation depends, however, on the mode in which it is given. Exhibited warm, either in infusion or decoction, it will puke,

produce sweating, or an increase of the urinary secretion. But in cold decoction, or powder, it produces its tonic effects only. It has been employed in intermittent, remittent, and yellow fever, in typhous pneumonia and catarrhal fevers, in dropsies, and for the removal of mere debility. For tonic effects, a wineglassful of cold decoction, or from 20 to 30 grains of the powdered leaves and flowers, may be given three or four times a day, or oftener.

WILD HOREHOUND. (*Eupatorium Pilosum*.)—The president of the medical society of Georgia says, that this plant “serves as an excellent substitute for the Peruvian bark, and, indeed, that among the planters in or near the sea-board, it supersedes the bark in the cure of fevers. It is tonic, diaphoretic, diuretic, and mildly cathartic, and does not oppress the stomach, as the bark is apt to do; hence, it may often be exhibited where the bark is inadmissible. It is usually given in the form of infusion: one ounce of the dried leaves, infused in a quart of water, may be taken daily, in doses of from two to four ounces every hour or two.

AMERICAN CENTAURY. (*Chironea Angularis*.)—This is a very pure bitter, and is resorted to by every description of practitioners, regular and irregular, in our intermittent and remittent fevers. It may be employed in every stage of these diseases. It is usually given in strong infusion, which may be taken without limitation. “Every part of the plant is medicinal, though the flowers possess most efficacy.”

WILD CHERRY. (*Prunus Virginiana*.)—This tree grows abundantly in every part of North America. The bark of all parts is used as a tonic, but that of the root is the most active. It is less stimulating than Peruvian bark, and may be substituted for it in the cure of agues. In large doses it is narcotic, which property depends on the Prussic acid contained in it. Its cold infusion is well adapted to the advanced stages of pulmonary consumption, lessening cough, night-sweats, and diarrhœa, and improving digestion. It has also been used with benefit in asthma and dyspepsia. It is a good wash for irritable sores, especially sore nipples. The dose of the bark in powder, is, from half a drachm to two drachms. Of the cold infusion, a wineglassful. It may also be given in tincture, alone or combined with other articles of its class.

YELLOW POPLAR. (*Liriodendron Tulipifera*.)—This is one of our most beautiful forest trees, and is known in some parts of the country by the name of the “tulip-bearing poplar.” The bark, particularly of the root, is a stimulating bitter and aromatic. It is extensively used in domestic practice in the cure of intermittent and low fevers, in dyspepsia, rheumatism, gout, dysentery, &c. It has also been advantageously employed in chronic and passive hemorrhages. The leaves of the poplar are used in country practice as a local application, in the headache of fever, and in sprains, bruises, painful rheumatic swellings, &c. Dose—of the decoction or infusion, a wineglassful; of the powdered bark, from 15 to 30 grains, several times a day. It is most generally used in tincture, in combination with dogwood and wild cherry bark.

BLUE GENTIAN. (*Gentiana Catesbii*.)—This is an American plant, and is said to be little inferior, in medicinal virtue, to the imported

Gentian. Dr. McBride of South Carolina speaks highly of its use in cases of debility. It is applicable to all cases where the yellow Gentian is indicated.

CHAMOMILE. (*Anthemis Nobilis*.)—The flowers of this plant, have been used in medicine, both externally and internally, from the earliest times. It is a mild and grateful tonic, and well adapted to cold, relaxed, and weak conditions of the digestive organs. With this view the flowers are generally directed in cold infusion, which should be made in a close vessel. In substance they are apt to purge, and the decoction is inert. Externally the flowers are used as a fomentation, or poultice, to allay inflammation, and to discuss or bring to maturation phlegmonous swellings, such as biles, &c.

HOP. (*Humulus Lupulus*.)—An infusion or tincture of the flowers is an agreeable, safe, and efficacious tonic. The most agreeable preparations are beer, ale and porter, which may be taken at discretion.

ASTRINGENTS.

These are medicines which produce condensation or contraction of the muscular fibres of the parts to which they are applied, and thence communicate their influence to other parts through the medium of sympathy, or association. The taste is the best test of astringency, there being no one principle which confers that property on the various articles possessing it.

Astringents are extensively used to check hemorrhage, when not owing to a rupture of the bloodvessels, but to a deficient action of the extreme arteries, and to check serous or watery evacuations in a similar state of the system. They exhibit their best effects when applied immediately to relaxed surfaces, as to the bowels in chronic diarrhœa, and in dysentery depending on mere debility. Leucorrhœa, gleet, and gonorrhœa, are often treated by astringents. Much judgement is required for their proper use. They should never be employed where depletion is indicated, nor in large doses except in extreme cases; for a sudden stoppage of habitual discharges is often productive of great mischief. Astringents are not well adapted to infantile diseases, being apt to produce mesenteric affections. Their internal administration should be preceded by emetics and cathartics, particularly in dysentery and diarrhœa. The minerals of this class are more permanent and less stimulating in their effects than the vegetables. The most valuable mineral and foreign vegetable astringents are, *Sulphuric Acid*; *Alum*; *Sugar of Lead*; *Sulphate* and *Muriate of Iron*; *White* and *Blue Vitriol*; *Lime-Water*; *Gall-nuts*; *Tormentil*; *Catechu*; *Kino*; and *Logwood*.

THE OAK BARKS, are all valuable astringents, but, on account of their nauseous taste, are seldom used internally. Dr. Chapinan says, "they are thought more particularly adapted to chronic diarrhœa, produced, or kept up, by debility, or to restrain the colliquative purgings

incident to the last stages of pulmonary and other affections. They are commonly given in powder, or simple infusion, in the dose of half an ounce of the latter, or of ten or twenty grains of the former preparation." A bath may be prepared for children of relaxed habits, by infusing the bark in water. Lizards, of Edinburgh, lauds it as a bath for the hernial sac after the bowel has been returned. The infusion is extensively used, locally, in falling of the womb, and of the lower bowel, in leucorrhœa, and in indolent ulcers. The gall nuts of the shops, are brought from Aleppo and the south of Europe, "but those of our own country are not deficient in power." The infusion of gall nuts is the antidote for tartar emetic, and a test for the salts of iron. It is also used as a gargle in relaxed states of the throat. It should be prepared in an earthen or porcelain vessel.

CRANESBILL, or CROWFOOT. (*Geranium Maculatum.*)—This species of geranium is met with in various sections of the United States; and a strong decoction is much used in domestic practice as a styptic in wounds. It is also successfully employed in internal hemorrhages, and especially those of the stomach and bowels. It may be used with benefit in cholera infantum, in chronic diarrhœa, and in the chronic stages of diarrhœa. Some of the Indian tribes are said to rely on it for the cure of the venereal disease. It is also serviceable in inflammation of the kidneys. The virtues of the plant reside in the root, which, as an internal medicine, in the bowel affections especially, is commonly prepared by being boiled in milk.

BLACK ALDER. (*Prinos Verticillatus.*)—This plant grows in almost every section of our country, and is well worthy of notice as an astringent. Both the bark and the berries are astringent. The latter may be made into a tincture with wine or spirits. The bark is used either in substance or decoction. It is said to be useful in gangrene, when taken internally, and also in various chronic diseases of the skin. It said to cure intermittent fever.

BEECH DROP. (*Orobanche Virginiana.*)—This is considered a valuable remedy by domestic practitioners, in diarrhœa, dysentery, and hemorrhages. A simple decoction of the root is employed. "The cancer powder of Martin, once so much confided in, was mainly composed of this article." It is still used as an external remedy, in obstinate ulcers, in thrush, and in chronic diseases of the skin.

BLACK-BERRY, and DEW-BERRY. (*Rubus Villosus* and *Rubus Procrumbens.*)—These are valuable astringents, and have been long used with advantage in bowel affections, particularly in the "summer complaints" of children, and in dysentery. An eastern physician of great experience says, "To the declining stages of dysentery, after the symptoms of inflammation are removed, they are well suited, though I have given them, I think, with greater advantage, under nearly similar circumstances, in cholera infantum. To check the inordinate evacuations which commonly attend the protracted stages of this disease, no remedy has ever done so much in my practice. They are moreover useful in all excessive purgings, from whatever cause proceeding, especially in the diarrhœa of old people, and when it occurs at the close of diseases." The whole

plant is actively astringent, as the root, the leaves, the bark, and the fruit. The root is most commonly used in decoction, and is to be preferred. It is prepared by boiling an ounce of the bruised root in a pint of water. A jelly prepared from the fruit is also an excellent preparation.

PURGATIVES.

These are medicines which promote the action of the intestines downwards, and also increase the secretions. They are divided into three classes, according to their difference of action, viz. Laxatives, Purgatives, and Drastic Purgatives. They are given for the purpose of exciting the secretory organs to action, and to promote evacuation. Different cathartics produce very different stools, and also act specifically on different parts of the alimentary canal. For instance, Gamboge acts on the upper bowels and produces watery evacuations, while aloes acts on the lower bowels, and procures consistent passages. Purgatives are decidedly antiphlogistic. They diminish the amount of the circulating mass—regulate the distribution of the blood, and promote absorption from the internal cavities, by diminishing the serum of the blood, which makes a call upon the absorbents to supply the deficiency. They are applicable to almost every form of disease. As a general rule, they should be given on an empty stomach, either in the morning or at night. In fevers, they should be given at such a time as to secure their action soon after the period of excitement begins. Their operation may be promoted by warm diluent drinks, bleeding, the warm bath, nauseating portions of emetic tartar or ipecacuanha, and clysters. In obstinate constipation, where cathartics are tardy or inefficient, a solution of the carbonate of potash, two drachms to a pint of water, of which a table spoonful may be taken every half hour, will seldom fail to procure evacuations. In the administration of remedies of this class, we must never lose sight of their diversity of action, and the application of the article given to the disease in hand. The list of cathartics in common use, includes *Manna*; *Tamarinds*; *Castor Oil*; *Olive Oil*; *Charcoal*; *Sulphur*; *Magnesia*; *Jalap*; *Scammony*; *Rhubarb*; *Senna*; *Aloes*; *Calomel*; the various neutral Salts; *Gamboge*; *Colocynth*; *Elaterium*; and *Croton Oil*. The following domestic purgatives are deserving of notice.

AMERICAN SENNA. (*Cassia Marilandica*.)—This plant grows abundantly in the United States. In doses one fourth larger, it is said to be equal to the Alexandrian senna. The mode of preparation is the same.

MAY APPLE, or MANDRAKE. (*Podophyllum Peltatum*.)—The root of this plant is the only part used in medicine. It is very similar in appearance and properties to jalap, and in a like dose is scarcely less active or effectual. "Like that medicine, also, its powers are heightened by a union with calomel, and, in bilious cases especially, ought not to be prescribed without it." It is less offensive to the stomach than jalap. It is said to be useful in intermittent fever, independently of its purgative

quality. Dose—of the powdered root, from ten to thirty grains. It, as well as other perennial plants, ought to be gathered in the fall, as the activity of the plant is then concentrated in the root. The leaves and young shoots are highly poisonous, but the fruit is eatable.

WHITE WALNUT or BUTTERNUT. (*Juglans Cinerea*).—This is the most valuable of our indigenous cathartics. It is used in the form of an extract, prepared by boiling the inner bark of the tree in water. It should be prepared in June, as the bark is then more active than at any other period. The extract resembles aloes in appearance, and seldom fails to procure bilious evacuations. As it does not stimulate, it is much used in bilious fever. It is well adapted to cases of habitual constipation; and its combination with calomel forms one of the very best purgatives we have, in all cases requiring their use. In doses of from 15 to 30 grains, it excites the liver to action, and evacuates the bowels thoroughly. The juice of the walnut is stimulant and escharotic, and is often used for curing eruptions of the skin.

EMETICS.

These are medicines which excite vomiting by a specific impression on the stomach, independently of mere distension, nauseous taste or smell. Evacuation by emetics is not confined to the stomach—the action of the first bowel is likewise inverted—and bile may thus find its way into the stomach, which was not in it at the beginning of the process. Hence the common notion, that repeated vomiting expels bile from the stomach! From their tendency to induce diaphoresis, and to evacuate morbid matters generally, emetics often cut short fevers in the beginning, revolutionize the whole system, and invigorate the secretions generally. They are indispensable in the treatment of many diseases, and are seldom forbidden in any. They are particularly useful in fevers, especially at the commencement, in jaundice from biliary calculi, in dropsies, swelled testicle, bubo, erysipelas, small-pox, measles, scarlet fever, croup, putrid sore throat, diseases of the eye, childbed fever, bilious pleurisy, rheumatism, &c. &c.

In the exhibition of emetics, care must be taken to adapt the article used to each particular case. If the symptoms are urgent, as in cases of poisoning, give prompt emetics (as white vitriol or ipecac.) in large doses: but if its instantaneous action is not demanded, give the emetic in broken doses, largely diluted with warm tea or water. Where nothing forbids, it is best to give these remedies in the morning, on an empty stomach. To promote the operation of an emetic, bleeding and the warm bath may be resorted to, together with copious draughts of lukewarm water. Walking, when the patient is able to do it, will often favor its operation. To check inordinate vomiting, recourse may be had to laudanum, brandy, ether, together with all the aromatics, and stimulating applications, and even blisters, may be applied to the pit of the stomach, and to the extremities. The mineral emetics are generally more prompt in their action, than those derived from the vegetable king.

dom. Previous to the exhibition of an emetic, if the patient be plethoric, or there be a great determination of humors to the head, blood should be let. This class contains *Ipecacuanha*; *Squills*; *Tartar Emetic*, with various other preparations of *Antimony*; *White* and *Blue Vitriol*, *Verdigris*, &c. The following are the best indigenous emetics.

INDIAN TOBACCO, or LOBELIA. (*Lobelia Inflata*).—This plant abounds throughout the middle and western states. It is very active, producing much relaxation, debility, and perspiration. It is generally acrid and harsh in its operation. Every part of the plant is active; but the roots, inflated capsules, and seeds, are most so. It should be pulled up by the roots in August. It may be given in powder or tincture. Dose—of the powdered seeds and roots, from 10 to 20 grains—of the tincture, one drachm. It may be used with advantage in consumptive and other coughs, depending on an accumulation of mucus in the air passages of the lungs. It is much famed as a remedy in asthma. In small doses, it possesses considerable expectorant and diaphoretic properties.

INDIAN PHYSIC. (*Gallenia Trifoliata*).—In the eastern and northern states, this plant is known by the name of *Bowman's Root*. It is but little, if at all, inferior to ipecacuanha. The root is the only part used. It is used as an emetic in intermittent and bilious fevers, in doses of from 30 to 40 grains of the powdered root. It has been employed in dysentery, in combination with opium, as a sudorific. In doses of from 2 to 4 grains, it is tonic, and has been employed in dyspepsia. The species of Indian Physic, found so plentifully in the western states, (*Gallenia Stipulacea*), is said to be greatly superior to the first variety.

TOBACCO. (*Nicotiana Tabacum*).—This as an active, harsh, and dangerous emetic. It should never be given except in extreme cases, when no other article of the class can be had. When it is given internally, the infusion should be used. It is made by infusing two ounces of the leaves in a pint of boiling water; of which the dose is from a half to a teaspoonful diluted. When the nauseating effects are desired for the purpose of producing relaxation, as in hernia, it is best to give it in the form of a clyster, which may be prepared by infusing a drachm of the leaves in a pint of water. It is sometimes applied over the region of the stomach, to induce vomiting, in cases of poisoning, or of great torpor of that organ. The moistened leaves are used for this purpose. Dr. Godman recommends a plaster of lard, sprinkled with Scotch snuff, to be applied to the chest in croup. Injections of tobacco smoke are sometimes employed, to produce relaxation. It is a powerful narcotic.

PACCOON, or BLOOD ROOT. (*Sanguinaria Canadensis*).—The powers of this medicine are not well settled. According to its dose, and method of administration, it may be emetic, narcotic, tonic, or expectorant. As an emetic, it is too harsh for general use. It displays its best effects in pulmonary affections, attended with difficulty of breathing, depending on spasmodic action of the lungs, and other organs concerned in breathing. It controls the pulse like digitalis. Dr. Ives, of New York, extols it in incipient consumption, and says, that in subacute inflammation of the lungs, it is far superior to either colchicum or digitalis. He

gives it in the form of a saturated tincture, made by infusing two ounces of the root in one pint of proof spirits, of which from 10 to 20 drops is a dose. Twenty drops is a medium dose for controlling the circulation. To produce vomiting, the dose must be increased. Ten grains of the powder may be given in water, for the latter effect. It has been used with advantage in bastard pleurisy, whooping-cough, chronic catarrh, dropsy of the chest, and in jaundice. It has also been recommended in old rheumatic complaints, and in intermittent fever. The powdered root possesses great reputation as a local application in scald-head, and various other cutaneous affections. It has also been applied to polypus of the nose, and to ill conditioned ulcers, with success.

WHITE MUSTARD. (*Sinapis Alba*.)—A teaspoonful of ground mustard seed, is a prompt and stimulating emetic. It should be given in plenty of warm water. Those who are in the habit of using mustard at table, will have to increase the dose. It acts with certainty, and without inducing prostration or debility. It is applicable in cases of poisoning, and where the only object is to expel the contents of the stomach. It was much used in cholera by the physicians of the United States, and its effects seem to have given universal satisfaction.

CHAMOMILE. (*Anthemis Nobilis*.)—A strong, warm infusion of chamomile is emetic. It is principally given to aid the operation of other emetics.

DIURETICS.

Diuretics are those medicines which promote or increase the urinary discharge. They form a very important class of remedies. Their beneficial effects are promoted by drinking freely of watery fluids—of cold water—or water impregnated with the vegetable acids—of water-melon seed or parsley root tea—or of mineral waters, during their use. Great attention must be paid to the temperature of the skin during the employment of diuretics, as the discharges from the skin and kidneys are in an inverse ratio. Whatever produces sweating, is unfavorable to an increase of urinary secretion. Hence, it is necessary to keep the patient cool, and to avoid every thing calculated to excite perspiration, where the object is to promote diuresis. In cases of retention of urine from stricture or spasm, the direct reduction of arterial excitement, by the use of the lancet, of antimonials, or of the warm bath, will generally afford relief. In such cases, the catheter or bougie should only be used after these remedies fail. In dropsies attended with excitement of the arterial system, the lancet, digitalis, and tobacco, are useful remedies, in consequence of their power in lessening the force of the circulation. The influence of debility, and of the depressing passions, go to favor an increase of the urinary secretion. The bowels must be kept quiet during the administration of these remedies, as otherwise the action of the medicine would be diverted from its proper channel. For the same reason, they should be given in small doses, largely diluted. Diuretics always act best when the pulse is low. They are applicable in dropsies; in diseases of the

kidneys, which arise from spasm or torpor; in disorders of the lungs; dropsy of the chest; pulmonary consumption; in the diarrhœa from metastasis which sometimes takes place between the bowels and kidneys; in diabetes; and in diseases of the heart. The diuretics in common use are, common *Potash*; *Salts of Tartar*; *Acetate of Potash*; *Crem. Tartar*; *Salt-peter*; *Soda*; *Squills*; *Digitalis*; *Tobacco*; *Meadow Saffron*; *Juniper Berries*; *Balsam of Copaiva*; the various *Turpentine*s; *Spanish Flies*, &c. The common indigenous diuretics follow:—

PARSLEY. (*Apium Petroselinum*.)—All parts of this plant are actively diuretic. The roots, however, are considered best. A strong infusion of the roots or seeds should be employed. It has been used with much advantage in dropsies, in suppression of urine from blisters, and in all cases requiring diuretics in children. Its virtues may be increased by uniting with it the seeds of the water-melon.

DANDELION. (*Leontodon Taraxacum*.)—This article is frequently prescribed as a diuretic, in domestic practice, with advantage. It is most useful in dropsies accompanied with obstruction of the liver, or chronic derangement of the stomach. Dr. Rush speaks highly of its powers, and says, that “*liver-grown* cattle are speedily relieved by grazing in fields abounding in this vegetable.”

Dandelion may be given in decoction—made by boiling an ounce of the root, sliced, in a pint of water, till the quantity is reduced one half, adding to the strained liquor a drachm of cremor tartar. Dr. Chapman says, “As a salad, the fresh leaves of the dandelion are used, and, when boiled, as greens. The root, well roasted, makes a very tolerable substitute for coffee.”

RATTLE-SNAKE WEED—SENEKA SNAKE-ROOT. (*Polygala Senega*.)—This plant deserves some attention as a diuretic. Dr. Ives, of New-York, speaks highly of its virtues in this respect. It seems to be most applicable to the dropsy of persons of a cold, phlegmatic habit. It displays its powers in a much higher degree, when preceded, for a few days, by the use of small portions of calomel, or blue pill. To prevent it from disturbing the stomach, some aromatic may be combined with it. Dose—of powdered root, from 10 to 20 grains, several times a day.

CARDINAL FLOWER. (*Lobelia Syphilitica*.)—The root is the only part used. It possesses considerable diuretic properties, and has been used with success in dropsy. It was once thought a specific for venereal disease, but was found to be useless.

PIPPISISSEWA. (*Chimaphila Umbellata*.)—This plant is also known in popular practice, by names of *Winter-green* and *Rheumatism Weed*. It is found throughout the United States, and has been much used as a diaphoretic in rheumatism. Dr. Chapman says, “As a diuretic, it is distinguished by activity and certainty of operation—with this peculiarity, that, while it stimulates the kidneys to an increased effort, it acts on the stomach as a tonic, with so much effect, that it has been prescribed for the cure of intermittent fevers.” “That it is useful in scrofula, is to be

presumed, since its reputation is so high, as to have acquired the title of 'King's Cure.' To open scrofula, it is best suited, the ulcers being washed with a decoction of it, while the same preparation may be taken internally." It has been much, and successfully resorted to, in dropsies. Its use produces an agreeable sensation at the stomach, followed by an increase of appetite. Besides in decoction, it is given in strong infusion, or in an extract; a pint or more of the former to be taken in the twenty-four hours, and of the latter, during the same period, one or two drachms, made into pills, or dissolved in water. Every part of the plant is active. The essential oil of winter-green, is the preparation now most used; but it possesses no advantage over the decoction of the leaves.

JUNIPER. (*Juniperis Communis*.)—"The juniper belongs to the cedar tribe, and is found in northern parts of the United States. The berries have been long used in dropsy, and other complaints requiring diuretics, with success. They are used in substance, infusion, and various compounds. They possess a strong, pungent, volatile oil, which is imparted to spirits by distillation, and is then called gin. It is a good form of exhibition in cases devoid of arterial excitement.

WILD CARROT. (*Daucus Carota*.)—"This is a very certain diuretic. Exhibited merely to promote the secretion of the kidneys, we shall rarely be disappointed. It is one of the means of relieving strangury from blisters. An infusion either of the root or seed is used, though the latter is preferred, and may be drank freely.

DIAPHORETICS.

These are medicines which promote the discharge by the skin, whether by insensible perspiration, or by sweating. Obstructed perspiration may depend on very opposite states of the system, as on high, febrile excitement, or on low, feeble action: hence, remedies of an opposite character are employed in different cases, to restore the evacuation. In high action, such remedies as lessen the force of the circulation, as bleeding, ipecac., emetic tartar, and other nauseants, the neutral salts, cold ablutions, &c. are to be employed. In low action, warm, stimulating articles are to be used, as guaiacum, snake-root, camphor, &c. Their favorable action, in such cases, depends rather on their tonic, stimulant powers, than on any specific diaphoretic tendency which they possess. They are to be avoided in diseases of excitement.

Diaphoretics cannot be used indiscriminately. The medicine employed, should be one suited to the disease in which it is employed, and to the particular condition of the system at the time of using it; for sweating should not be forced, under any circumstances. It should always be remembered, that spontaneous evacuations are the effects, rather than the causes, of favorable results. If the temperature of the skin is above 102 degrees, sweating cannot take place. In fevers, a commencement should be made with the most cooling and laxative arti-

cles of the class, and their effect should be promoted by liberal draughts of diluent drinks. If the temperature of the skin is high, the drinks should be cold—if low, they should be warm. The patient should not be oppressed with clothing. During the effort to produce sweating, the bowels should be kept quiet, and no attempt be made to excite the action of the kidneys. When the process is over, it should be checked in the most gradual manner. The patient must be rubbed dry with warm cloths, and the body be exposed gradually to the ordinary action of the atmosphere, first exposing the hands, then the arms, &c. Diaphoresis always brings with it relief, cheerfulness, and hilarity—its suppression drives the fluids to the interior, and induces uneasiness, pain, and disease.

Diaphoretics are indicated in a great variety of affections, and particularly in fevers, the paroxysms of which cannot be fully developed, or run their course regularly without sweating, or an approach towards it. These remedies are used in intermittents, to cut short the paroxysm, by hastening the last or sweating stage—or, to prevent the paroxysm. For the first object, such as are least stimulating are to be employed—for the latter, the more stimulating articles may be used, as Dover's powder, snake-root, &c. In remittent and continued fevers, recourse must be had to cooling diaphoretics, and they must not be resorted to until all inflammatory action is subdued by bleeding, purging, and emetics. In bowel complaints, especially in dysentery, ipecac. alone, or in combination with calomel, is the best diaphoretic; emetic tartar, from its harshness, and tendency to excite irritation, not being applicable to such cases. In diarrhœa, active depletion not being so necessary, this class of remedies may be resorted to at an early period. It is more difficult to excite the skin to action in children than in adults. In cholera infantum, or the "summer complaint," in addition to mercurial cathartics, the skin must be excited by the warm bath, stimulating frictions, flannel dresses, a flannel bandage to the abdomen, &c. In acute rheumatism, and pleurisy, active depletion must precede the administration of diaphoretics, after which, those of the least stimulating character must be chosen. Camphor and guaiacum are only applicable to chronic rheumatism. This class is not productive of much benefit in dropsies, and should never be resorted to where diuretics and purgatives can be made to act. They are more beneficial in the dropsies which sometimes follow an attack of fever. This class comprises nearly all the emetics; the various preparations of *Antimony*; *Ipecacuanha*; *Nitrate of Potash*; *Acetate of Potash*; *Guaiacum*; *Camphor*; *Savin*; *Opium*; and various preparations of the *alkalies*, and *neutral salts*. The following indigenous productions rank among the most important and successful remedies of the class.

VIRGINIA SNAKE-ROOT. (*Aristolochia Serpentaria*.)—This is warm, pungent, and bitter to the taste. It increases the force and frequency of the pulse, and produces a glow throughout the system, followed by strong diaphoresis. It is used in the advanced stages of all fevers attended with typhoid symptoms, where the skin and tongue are dry, and the pulse is small and feeble. It must not be administered when the pulse is active, or in cases attended with inflammatory symptoms. It is used in eruptive diseases, to keep out the eruption, or to restore it if it has disappeared. In the latter case it will be likely to do injury, if it does not succeed in restoring the eruption. It exercises a good influence in cases of intermittent fever, that terminate in an imper-

fect sweat. It is frequently combined with bark, to determine to the skin. It will frequently lend efficient aid to Dover's powder, and other opiates, in exciting action to ward off the chill. In pleurisy, it may be given with advantage, in the latter stages, after free depletion. In the "Cold Plague," many relied on diaphoresis, produced by the long continued use of snake-root; and it is said to have been the most successful practice. It has also been recommended in dyspepsia, attended with a dry skin.

Its usual form of exhibition is in infusion, made by steeping from one drachm to an ounce of the root in boiling water, for one hour, in a covered vessel. The weaker the infusion, the oftener it may be taken. It should be kept warm. From one to two ounces may be taken every three hours. Boiling dissipates its full virtues. The dose of the powder is from 20 to 30 grains. It is sometimes used in combination, in the form of Huxham's tincture, or of Stoughton's bitters.

SENEKA SNAKE-ROOT. (*Polygala Senega*.)—This is one of the most valuable of our indigenous productions. It is used in pulmonary affections, where there is much cough, attended with little fever. It is improper where inflammatory symptoms run high; nor is it admissible in the hot stage of fever. It possesses considerable reputation as a diaphoretic in chronic rheumatism, and is much relied on by physicians in the treatment of deranged menstruation. The Virginia snake-root is the most stimulating, and better suited to typhoid fevers, while the seneka is more nauseating, and applicable to higher grades of action. In large doses it produces vomiting, purging, and sweating. It is usually given in decoction, made by half an ounce of the bruised root in one pint of water, the dose of which, taken warm, is one ounce, repeated as circumstances may dictate. Dose of the powdered root—from 15 to 20 grains.

BONESET. (*Eupatorium Perfoliatum*.)—This plant is known in some parts of the country by the name of *thoroughwort*, and is another valuable article in the treatment of disease. It is a very powerful sudorific. In fever, it may be used either in powder, or in decoction of the leaves. Dr. Anderson recommends the powder in the cold stage or remission, as a tonic, and the decoction in the paroxysm as a diaphoretic. Drs. Hosack and Baird used it with advantage in yellow fever. Dr. Dutton says it may be given with the greatest benefit in every stage of fever. A wineglassful of a decoction of the dried blossoms, may be given every hour. Nausea may be prevented by adding to it a few drops of the essence of peppermint or of pennyroyal. It is very favorably spoken of in rheumatism. The warm decoction seldom fails to excite perspiration, and produces but little increase of the action of the heart and arteries. Dr. Drake recommended it to be used for its tonic effects, as a preventive of cholera. A warm infusion of the flowers is preferable to the leaf. Dose of the leaf in powder, from 10 to 30 grains.

PLEURISY ROOT. (*Asclepias Tuberosa*.)—This plant is also known by the names of *Fluxroot*, *Silkweed*, and *Butterfly-weed*. Dr. Barton says it produces perspiration, without increasing the heat of the body. "As a diaphoretic," says Professor Chapman, "I think it is distinguished by great certainty and permanency of operation, and has this estimable property, that it produces its effects without increasing much

the force of the circulation, raising the temperature of the surface, or creating inquietude or restlessness. On these accounts, it is well fitted to excite perspiration, in the forming states of most of the inflammatory diseases of winter; and is not less useful, in the same cases, at a more advanced period, after the reduction of action by bleeding, &c. As far back as the earliest recollection extends, the root of the asclepias was employed in popular practice, in this country, as a sweat, in catarrh, rheumatism, inflammatory fevers, and, above all, in fevers. It may be given in doses of a teacupful of the strong decoction, and of the powder from 20 to 30 grains. A decoction in milk may be prepared for children.

PRICKLY ASH. (*Zanthoxylum Fraxineum*.)—The bark of the wood is diaphoretic, and is much used as a popular remedy in chronic rheumatism. A gill or two of a decoction of the inner bark, may be taken several times a day. Dose of the bark in powder, from 20 to 30 grains.

Besides these plants, many other native productions are employed to promote perspiration, among which the sassafras, soapwort, and poison-oak, have found a place in the regular dispensaries. The preceding, however, are those which possess the most reputation and claims to confidence. They are capable, when properly administered, of fulfilling every indication which could be met by others of their class, which have been omitted.

EXPECTORANTS.

“It is not easy,” says Dr. Chapman, “so various are the properties of these articles, to arrange them, without a minuteness of classification hardly admissible. To distribute them according to their affinities to the different parts of the pulmonary apparatus, and particular adaptation to the various cases, would be most practically useful. But, in the present state of our knowledge, especially as regards the first point, I apprehend the plan could not be very readily effected.

“By some writers, the mucilaginous beverages have been placed among the more lenient expectorants, such as flax-seed tea, or barley, or rice water. But though these are useful in some of the pectoral affections, by doing away irritation about the fauces, and thereby palliating cough, they can scarcely be considered as expectorants, and may, with more propriety, be still designated by the title of demulcents.”

The remedies belonging to this class are, the *Iceland Moss*; *Benne Plant*; *Liquorice Root*; *Gum Arabic*; *Gum Ammoniac*; *Squills*; *Assafatida*; *Carbonate of Ammonia*; *Carbonates of Potash and Soda*; *Meadow Saffron*, and the various *Balsams*; in addition to which we have the following indigenous articles:—

SENEKA SNAKE-ROOT. (*Polygala Senega*.)—The diuretic virtues of this article have already been noticed; and to complete its medical history, it only remains to speak of its virtues as an expectorant. In this respect it is entitled to very great attention. being undoubtedly one of the

most active and useful articles of this class. Possessing, however, very considerable stimulant along with its other properties, it cannot be used with safety in cases attended with high inflammatory excitement. In the latter stages of pneumonia, after the general as well as local inflammatory action has been moderated by depletory measures, there sometimes remains a troublesome cough, attended with imperfect expectoration, which is in general greatly relieved by the use of a decoction of this root. It also acts very beneficially in cough excited by an irritation in the fauces and larynx from cold, and which is usually attended with hoarseness. In no disease, however, has this article been more extravagantly praised as an expectorant, than in cynanche trachealis. Dr. Archer, who first noticed its virtues in this disease, represents its powers as often adequate, without the aid of any other means, to remove this alarming malady. Although very seldom sufficient, by itself, to the performance of a cure in this disease, it is unquestionably a very useful remedy in its management. As an emetic, it has been used in the beginning of the disease, and there can be no doubt of its often manifesting very beneficial effects when employed with this intention. Its stimulating properties, however, render it objectionable in the early stages of the complaint; and it is besides not equal to the tartar emetic in this respect, which is at once prompt, relaxing, and antiphlogistic in its effects. If, after the inflammatory symptoms have been reduced, a dry and hoarse cough, with oppressed respiration remains, we possess no remedy equal in efficacy to the polygala. To children from two to six years of age, we may give one or two tea-spoonfuls of a decoction made by boiling half an ounce of the root in a pint of water down to three gills, with an equal quantity of honey, every one or two hours, until vomiting comes on. It is also an exceedingly good remedy in the hoarseness which is apt to affect children on taking cold, and which, if neglected, sometimes terminates in croup.—*Eberle*.

GARLIC. (*Allium Sativum*.)—The peculiar odor and acrimony of garlic are extracted by infusion in water; but by boiling they are almost entirely dissipated. In point of medicinal properties it bears considerable analogy to the squill; being, however, inferior to it in its powers. As an expectorant, it has been frequently prescribed in catarrhal complaints, and it would appear to be more especially indicated from its diuretic virtues in such cases as are attended with a hydropic state of the system. Being, however, much more unpleasant, and less active than many other articles of this class, especially the squill, it is at present but seldom employed as an internal remedy in regular practice. It is usually given in the form of a syrup, or oxymel, which is made by infusing the root in vinegar, and afterwards adding honey to it until it acquires the consistence of a syrup.

The onion also is employed, particularly in domestic practice, as an expectorant; and its effects in this way are very useful.—*Eberle*.

INDIAN TURNIP. (*Arum Triphyllum*.)—This plant is found both in North and South America. The root is the part employed for medicinal purposes. The dried root possesses but very little acrimony. It is, however, not destitute of active properties even in this state, and may be very usefully employed in pectoral affections, as well as in various other complaints connected with a cold and cachectic habit of body. It is

by no means incapable, as is stated by some writers, of affecting the general circulation. Of the contrary of this I have more than once had satisfactory evidence. In the chronic asthmatic affections of old people, it is a remedy of very considerable value. I have also seen it do good in chronic catarrhs, and in phthisis pulmonalis. In these complaints it is indeed one of the most common remedies in domestic practice. It has also been prescribed with advantage in rheumatism, and in aphthous sore throat. In this latter affection Dr. Thatcher says, it is a remedy of approved efficacy. It has been recommended in the form of an ointment made of the fresh root, in tinea capitis, and tetter. Dr. Burson states, that the berry of the arum is more retentive of its peculiar acrimony than any other part of the plant. The arum root is usually directed to be given in the form of a decoction in milk; but Dr. Bigelow observes, that it imparts none of its acrimony to milk on boiling. The best mode of administering it would appear to be in the form of an emulsion with gum arabic and sugar. It may be given in doses of from twelve to sixty grains two or three times a day. Besides the articles already mentioned, there are a great many others from the vegetable kingdom, that possess expectorant properties; of which the following are the principal: *Inula helenium*, *iris florentina*, *tussilago pesasites*, *pulmonaria officinalis*, *borago officinalis*, *hedera terrestris*.—*Eberle*

RATTLE WEED. (*Actæa Racemosa*.)—This is a very beautiful plant, known by the provincial titles of rattle weed, rich weed, and black snake root. I do not know that I am correct in placing it among the expectorants. Its powers are various, though no one is so predominant or well ascertained, as to enable us to assign it the most appropriate position. By the late Professor Barton, it is located among the astringents, and he tells us, that a decoction of the root was used as a gargle in a putrid sore throat, which prevailed in New Jersey. Besides this property, which I have never been able to discover in any degree, it is expectorant, narcotic, antispasmodic, diaphoretic, and, in a large dose, emetic. Given so as to affect sensibly the system, we find, first, some nausea, followed by greater freedom of expectoration, and more or less relaxation of the surface, with slight nervous tremors, and vertiginous affections. The pulse, during this state, is considerably lowered, and is apt to remain so for some time.

My motive for placing this article among the expectorants, is the reputation which it has acquired in pulmonary diseases, especially asthma and consumption. Its use, it is true, has hitherto been confined pretty much to popular practice, though there is not wanting some better evidence of its efficacy. It is alleged, in consumption, to lessen the frequency of the pulse, to allay the cough, to quiet the mobility of the system, and particularly to subdue hectic fever. How far this is true, my own experience does not enable me to say.—*Chapman*.

SLIPPERY ELM. (*Ulmus Rubra*.)—This country furnishes several species of elms, all of which are, perhaps, in some degree, medicinal. But it is the red slippery elm which is mostly employed. The inner bark of this tree, by infusion, affords a viscid, mucilaginous matter, which is now, especially by country practitioners, extensively applied. As an expectorant, or demulcent, it is a favorite remedy in catarrhs, in the declining stage of pleurisy, in consumption, &c. It is also found not less

beneficial in the complaints of the urinary organs, and its reputation is still better established in diarrhœa, and, above all, in dysentery. That it does good in the latter disease, and even more than other mucilages, I am inclined to believe. To this point I have much evidence in my possession, though my own experience with it is limited. It is known to many, that the late Dr. Grant, of Virginia, had, for nearly half a century, an unrivalled reputation in the part of the country where he resided, in the management of dysentery. His practice, as he once informed me, consisted in little more than purging moderately in the commencement, and subsequently using freely the elm mucilage. By this alone, he declared, that the bloody stools, tormina, tenesmus, &c. were more speedily removed than by the ordinary remedies. Even admitting one half of this statement to be correct, the article will still appear highly deserving of attention.

As an external application, it has not been less employed. It forms an excellent emollient poultice, even milder, it is said, than bread and milk, or flaxseed. This is a good deal resorted to in country practice, in ulcers, recent burns, chilblains, cutaneous eruptions, and in the discussion of tumors and other swellings. By many of our army surgeons, it is highly esteemed in gun-shot wounds, and is said sometimes to be beneficial in arresting a tendency to mortification. Like other mucilaginous matters, it is nutritive, so much so, that it constitutes one of the resources of our Indians in extreme emergencies.—*Chapman.*

INHALATIONS.

The inhalations of aeriform fluids may be employed to great advantage in the treatment of pulmonic affections. In this way we are enabled to make direct impressions on the respiratory organs, a circumstance which experience has shown to be of much consequence in many of the diseases to which these organs are liable.

Aqueous vapors.—In catarrhal affections, attended with painful and difficult expectoration, much benefit may generally be obtained from the inhalation of the steam of hot water, or of vinegar and water. This acts as an emollient and soothing application to the tender and inflamed vessels of the internal surface of the bronchial tubes. In pneumonia also, after the violence of the arterial excitement has been reduced by depletory measures, the inhalation of steams of hot water, or decoctions of emollient herbs, will often contribute much to the support of an easy and regular expectoration. In no affections, however, are inhalations of this kind more decidedly beneficial than in the paroxysms of asthma. “To moderate the severity of the paroxysms in asthma,” says Dr. Thomas, “we cannot employ a more powerful and efficacious mean of relief than the inhalation of warm steam frequently from an inhaler or the spout of a tea pot. An infusion of chamomile flowers, with the addition of a little æther, may be used on the occasion.” Inhalations of warm water and vinegar are also often very serviceable in cynanche tonsillaris, and croup.

Ætherial vapors.—The inhalations of ætherial vapors is a remedy of very considerable value in certain affections of the respiratory organs. In difficulty of breathing, depending on a spasmodic condition of the pulmonary system, I have frequently derived very great benefit from the inhalation of the vapors of sulphuric æther. Dr. Pearson, who speaks very highly of the employment of the sulphuric æther in this way, affirms that its efficacy is considerably enhanced by dissolving in it some of the extract of cicuta. Mr. Alibert states, on the authority of an author whose name he does not mention, that the inhalation of sulphuric æther was found quite useful in a case of catarrhal phthisis, complicated with hysteria. The effects which arise from the inhalation of the vapors of this æther from a bladder are exceedingly remarkable, and resemble entirely those which are known to proceed from the inhalation of the nitrous oxide gas. The sensations experienced during the temporary madness it produces, is said to be indescribably pleasant; but the shock given to the brain by the experiment is violent, and has been known to bring on convulsions, and other alarming symptoms.

Quite recently, Dr. Bodtcher, of Copenhagen, has published some observations on the efficacy of the vapors of camphor in complaints affecting the cavities of the nose, the throat and the chest. He states, that in the worst cases of stoppage of the nose, from cold, a piece of camphor need only be kept for a few minutes before it, to obtain great relief. In cynanche tonsillaris, camphor kept before the mouth or nose, is said frequently to produce much good. It has also been found very serviceable in spasmodic coughs, in croup, and in asthma. I have seen camphor employed in this way, and can say nothing concerning the value of this practice. Dr. Bodtcher, however, speaks with great confidence of its usefulness.

Fumes of burning substances.—The inhalation of the fumes of tar and of resin was very clearly considered beneficial in diseases of the lungs. Dr. Mudge, of Plymouth, above thirty-five years ago, related a case of pulmonary consumption, attended with purulent expectoration, which was entirely cured by residence in the country, and the inhalation of the fumes of common resin twice a day. But the attention of the profession was more particularly directed to this practice, about six years ago, by a publication of Dr. Alexander Crichton, physician to the court of St. Petersburg. He gives an account of several consumptive patients who were perfectly cured by the employment of the tar fumes. He states, that the best mode of fumigation is to put the tar into an open vessel, over a lamp or hot iron, so as to produce a slow volatilization, until the air of the chamber is well impregnated. In this atmosphere the patient may remain from one to two hours together, two or three times a day. He observes also, that when the cough and hectic have been considerably subdued, the fumigation should not be persisted in, as it is apt to produce a troublesome dry cough, and prevents the enjoyment of what is then fit for the patient—common air.

In the treatment of whooping cough, the inhalation of tar fumes is often highly beneficial. Mr. Wansbrough, of Fulham, in England, has related some very remarkable instances of the efficacy of this remedy, in this as well as in several other diseases, attended with difficulty of respiration. An infant three months old, from an accidental exposure to cold, became affected with catarrh, and difficulty of breathing, attended with evident

accumulation of mucus in the bronchial cells, which the child was not able to expectorate. The symptoms increased rapidly; leeches, emetics, and expectorants, were unavailingly used, and death appeared to be inevitable. In this situation he had recourse to *tar vapor*. "I applied it at a distance," he says, "whilst the child lay in its mother's arms, breathing quick and short, with frequent interruption, from what appeared to be accumulation in the bronchia. The little creature seemed revived the instant she inhaled the vapor, and made an effort to cough." The fumes were brought nearer to her nostrils, which soon occasioned cough and vomiting. The patient was greatly benefited by this, and by repeating the fumigation twice a day for about a week, she was perfectly restored. In two cases of whooping cough, that had been mismanaged during the early periods of the disease, and in which the expectoration had assumed a purulent appearance, I have derived decided benefit from tar fumigations. This remedy has also been found very useful in asthmatic affections. In acute inflammatory affections of the lungs, however, it cannot be employed without doing mischief. "It appears," says Mr. Wansbrough, "in cases where the lungs are under the influence of an inflammatory diathesis, the exhibition of the tar fumes is improper; but in chronic pulmonary affections, and also subsequent to the existence of increased arterial action, I have no doubt of the superior efficacy of this remedy." Mr. Wansbrough employed the vapor of the Barbadoes tar. The inhalation of the tar fumes appears to be particularly beneficial in chronic bronchitis, or in that form of pulmonary consumption which depends on a chronic inflammation of the mucus membrane of the bronchia.

The inhalation of nitrous vapors has also been employed, with much advantage, in certain affections of the respiratory organs. It is stated to be particularly efficacious in whooping cough. Several cases of this disease are related by Mr. Patterson, in which these fumigations produced the happiest effects. Dr. John Thomas, of Philadelphia, has also related an instance of the excellent effects of this remedy in the present disease. The most convenient mode of applying nitrous vapors is, to put an ounce of sulphuric acid into a teacup placed in a sand-bath, and to add to the acid, from time to time, small portions of the nitrate of potash.

The practice of smoking the roots of stramonium in asthma, and other pulmonary affections, does not appear to be entitled to much attention. I have prescribed it in several instances, but never with the slightest advantage. I have nevertheless seen some asthmatic persons who assured me that they generally derived benefit from it.

Gases.—Soon after the discovery of oxygen gas, many physicians directed their attention to its employment in the treatment of diseases, and the reports which were at first published of its effects were highly promising. A more enlarged experience, however, has not confirmed the expectations which were once entertained of its powers, and it is now as much too little attended to as it was formerly too highly extolled. The respiration of this gas was at first prescribed by Fourcroy in pulmonary consumption, and although its immediate effects appeared to be salutary, it was soon found to be one of the most certain means of hastening the progress of this disease to a fatal termination. Beddoes, believing that phthisis is essentially connected with a superabundant absorption of oxygen in the lungs, conceived the idea of placing consumptive patients in an atmosphere containing a smaller proportion of oxygen than the common air:

or causing them to respire occasionally, from a proper apparatus, air with a reduced portion of this gas. Hence he recommends consumptive patients to live in low and miasmatic districts, to sleep in cow stables, or in other places containing a deteriorated atmosphere. Experience, however, did not realize the hopes which were entertained of this practice, although there are not wanting some well authenticated examples of its having procured advantage.—*Eberle*.

ANTHELMINTICS, or *Worm Medicines*.—"Anthelmintics are those remedies which destroy or expel worms situated in any part of the alimentary canal. This class is exceedingly extensive, and has been variously arranged. There is, indeed, hardly any article of the materia medica which has not, under certain circumstances, evinced more or less of a vermifuge property.

The anthelmintics are endowed with very different powers, and operate in several distinct modes. There is one set which may be considered as poisonous to these animals. There is a second, which are mere evacuants of them, as the purgatives. There is a third, which are mechanical irritants. There is a fourth, which operate indirectly, by changing that condition of the stomach and bowels on which the generation, and, perhaps, subsistence of worms depend. Yet it is to be understood, that some of these articles are equally applicable to every sort of worm, and are thus indiscriminately employed.

It has long been a matter of controversy among practitioners, whether worms are in themselves noxious, or ever prove the original or accessory cause of disease. This point was once warmly debated. While on the one hand it was maintained, that almost all the complaints of children are influenced, in a greater or less degree, by the irregular movements of these animals, it was, on the other, as strongly insisted, that they are entirely harmless, and therefore merit no sort of consideration. By some of the disputants, it was even declared, that worms are highly useful in executing the duties of scavengers, removing the indigested sordes, and preserving clean the stomach and bowels. Nothing is less correct, or would be more dangerous than this extravagant notion, if carried into practice.

Whoever is conversant with the complaints of children, and has attended to them, without any of those prejudices which pervert the judgment, must acquiesce in this sentiment. I have had again and again occasion to witness a variety of diseases, which either originated or were kept up and aggravated, by the irritation of worms. There is, indeed, scarcely a complaint which the presence of these animals will not excite or imitate. Cases are recorded of their producing epilepsy, catalepsy, chorea, tetanus, apoplexy, mania, hydrocephalus, ophthalmia, perverted vision, paralysis, especially of the muscles subservient to speech, syncope, palpitations of the heart, hiccup, dry cough, pleuritic pains, consumption, cynanche trachealis, rheumatic pains of the joints, dysentery, convulsions, &c. To these may be added a peculiar fever termed *verminosa febris*. This is a slow and irregular remittent. The exacerbations are attended with heavy drowsiness: the remissions with a morbid vigilance. There is pain in the bowels, and at the pit of the stomach, with occasional purging, and a good deal of gastric distress.

The head is much affected, sometimes painfully, though, for the most part, with stupor or delirium. The eye is wild, the pupil dilated, the

alæ of the nose contracted, the cheeks flushed, the forehead polished, as if glazed. The case, in short, presents so many of the appearances of hydrocephalus, that it is easily mistaken for that disease. Two symptoms, however, most commonly attend, which are peculiar and distinctive. These are, a very *strange alteration of the voice*, and, in some instances, a *total loss of speech*.

But it is proper to state, that by Butler, a name which holds a respectable place in the annals of our science, it is positively denied, that this species of fever is at all occasioned by worms. It is contended by him, with no little plausibility, that it proceeds entirely from crude accumulations in the intestinal passages, and he recommends for its cure, purging. In a majority of cases I think he is right, though it is still manifest to me, that he has laid down his position too generally, and without making those exceptions which are sometimes found to exist.

Among the anthelmintics are arranged *Calomel*; *Hellebore*; *Tansy*; *Cabbage Tree*; *Camphor*; *Iron*; *Male Fern*; *Cowhage down*; *Tin*, and the *Aloetic* preparations. The following domestic remedies of this class are deserving of the highest confidence:—

PINK ROOT—**CAROLINA PINK.** (*Spigelia Marilandica*).—This plant is indigenous to the southern parts of the United States, where it is found in great abundance, and is esteemed as a very valuable vermifuge. Its anthelmintic properties, however, are almost entirely confined to the long round worm, possessing little or no powers in destroying or removing the other species of intestinal worms. It was first introduced into regular practice by Drs. Lining, Garden, and Chalmers, of South Carolina, and it is now more frequently prescribed in this country for the expulsion of the round worm than any other anthelmintic we possess. The whole plant possesses anthelmintic properties; the root, however, is by far the most powerful portion of it. *Spigelia* is much more active in its recent state than when old; by very long keeping it loses nearly all its active qualities.

Dr. Thompson took large doses of this root, and found it to produce acceleration of the pulse, flushed face, drowsiness, and a sensation of stiffness of the eyelids. It is now ascertained beyond a doubt, that this root possesses narcotic powers, capable of producing unpleasant and even alarming symptoms, when taken in very large doses.

The pink root may be given either in powder or in decoction. The latter mode of using it is, however, the preferable one, as the medicine is much more rapidly and equally diffused through the intestinal canal when in a liquid form than when given in a powder. The powder is given to children in doses of from ten to twenty grains. A pint of the decoction made from an ounce of the root, should be given in the course of four, five, or six hours. It is usual to combine senna with the pink root, in order to procure the expulsion of the worms as soon as they have been destroyed or weakened by this anthelmintic. It is better, however, to give the *spigelia* by itself, and to exhibit a strong mercurial purge immediately after the medicine is taken. Given in this way it will seldom fail to bring away worms, if there are any present. The pink root possesses purgative properties; but these are both uncertain and feeble.

THE PRIDE OF CHINA. (*Melia Azedarach*).—This beautiful and stately tree was originally brought from Japan, and is now naturali-

zed to most of the countries of Europe, and to the southern parts of the United States.

It appears from the testimony of some of our southern physicians, that the fresh bark of the root of this tree possesses very active anthelmintic properties. Dr. L. Kollock, Vice President of the Georgia Medical Society, speaking of the vermifuge powers of this tree, says: "It is a vermifuge of efficacy. Its use is, in some measure, general among the planters, and, with many, supersedes the use of all others. I have given it with success where all others in common use have failed of relieving." This article, like the spigelia, is also a useful febrifuge medicine, in those affections usually denominated verminous fevers, but where no worms are voided. The common form is that of decoction: a large handful, say about four ounces, of the bark of the fresh root, is boiled in a quart of water, till it acquires the color of strong coffee, *i. e.* to about a pint, of which from half an ounce to an ounce may be given every two or three hours till it operates.

The late Professor Barton had a very high opinion of the vermifuge powers of this tree. He considered it as the most active anthelmintic with which we are acquainted. The berries have also been employed with success as an anthelmintic. Children are suffered to eat them, "without any particular regard to the dose," and it is stated by some, that they are quite as efficacious as the bark of the root. The pulp of the fruit made into an ointment with lard, has been employed with success in *tinea capitis*.—*Eberle*.

JERUSALEM OAK. (*Chenopodium Anthelminticum*.)—This is a native of different parts of the United States. Every part of the plant is endowed with active properties, but the seeds are decidedly the most powerful. The juice of the fresh leaves is occasionally employed in the dose of a table-spoonful two or three times a day, for children under five years old. Given in this way, however, it is exceedingly unpleasant, and very few children can be induced to take it. The best, and, indeed, usual form for giving this remedy, is the powdered seeds, made into an electuary, with syrup. From twenty to forty grains of the seeds may be thus taken two or three times a day, by a child four or five years old. It is usually directed to be given early in the morning, before eating, and again in the evening some hours after supper.

The seeds of the chenopodium contain an essential oil, which has been lately much recommended in cases of worms. It is, indeed, an exceedingly active vermifuge; I have, in many instances, succeeded in expelling numbers of lumbricoides with it, after various other anthelmintics had repeatedly been tried in vain. A child two or three years old may take from three to eight drops twice a day, mixed with a good deal of sugar or mucilage. After it has been given for three or four days, some brisk purgative medicine should be administered. The oil, like the expressed juice, is very offensive, both to the taste and smell, and this forms a very great obstacle to its employment with children. Where it can be regularly given, however, it is unquestionably one of the best anthelmintics of which we have any knowledge.

The *Chenopodium Ambrosioides*, another species of this genus, bears considerable resemblance to the preceding species, and is not unfrequently mistaken for it. It possesses considerable anthelmintic properties, but is inferior, in this respect, to the chenopodium anthelminticum.

OIL OF TURPENTINE. (*Oleum Terebinthinæ*).—A great deal has been said concerning the vermifuge powers of the spirits of turpentine. Its efficacy in the expulsion of tænia has been so frequently attested, that we can no longer doubt of its excellence in this respect. When employed for the expulsion of this worm it should be given in large doses. From one to three ounces are commonly administered at once. Before the turpentine is taken, the bowels should be freely evacuated by some active purgative medicine. “Whatever quantity it may be thought proper to give at one trial of the remedy, should usually be given in one dose. Three ounces of the spirits of turpentine taken at once will be more likely to destroy the worm or worms, than the same quantity taken one-third at once, repeated after an interval of one, two, or three hours, and will be much less tedious to the patient.” When given in large doses it generally passes through the bowels in a short time, and is, consequently, less apt to be absorbed, and to affect the urinary organs, than when employed in small doses. If it does not move the bowels three hours after it is taken, a large dose of castor oil should be given. The turpentine is also an active remedy against the lumbricoides. When employed for the destruction of these worms, however, it may be given in much smaller doses than is necessary for the expulsion of tænia.

Dr. Klapp, of Philadelphia, in a paper on worms in the stomach, adduces a number of examples of the value of this remedy as a vermifuge. He gave it in doses of from twelve to fifteen drops every four, five, or six hours, occasionally interposing a mercurial cathartic. It acts with peculiar advantage when the worms are situated in the stomach. In several instances of verminous affections, attended with a dull pain in the epigastric region, sickness of the stomach after eating, vertigo, a dry short cough, foul breath, and an occasional choking sensation in the throat, I have administered turpentine in doses of from fifteen to twenty drops, continued for three or four days, and with complete success. The worms, under the use of this remedy, are usually discharged in a dissolved state.—*Eberle*.

DIET FOR THE SICK.

SAGE TEA.—Take of the leaves of green sage, plucked from the stalks and washed clean, half an ounce; loaf sugar, one ounce; outer rind of lemon peel, undried, a quarter of an ounce; boiling water, two pints. Infuse them in a deep vessel for half an hour, and then strain off the tea. When the sage is dried, it must be used in a less proportion than that above.

In the same manner teas may be made of balm, rosemary, southernwood, &c., the lemon peel being omitted, or not, and the sugar lessened or increased, as occasion requires.

OATMEAL TEA.—Take of oatmeal, one handful; boiling water, one gallon. Mix them in a deep pan, and when they have stood about half an hour, or until the meal is subsided, strain off the tea

BRAN TEA.—Take of bran, fresh ground, two handfuls; common treacle (or molasses,) one spoonful; boiling water, six pints. Mix them well, and when they have stood covered about three or four hours, strain off the tea.

LINSEED, or FLAX SEED TEA.—Take of linseed, whole, one ounce; double refined sugar, one ounce and a half; lemon juice, two ounces; boiling water, two pints. Infuse them in a stone or porcelain vessel, for some hours, and then strain off the liquor.

An ounce of licorice shaved, may sometimes be used instead of the sugar.

CAMOMILE TEA.—Take of camomile flowers, one handful; boiling water, one gallon. When they have stood covered up about half an hour, strain off the tea.

WHITE WINE WHEY.—Take of new milk, two pints; water, one pint. white wine, one gill. Put the milk and water into a saucepan, well tinued, and set them upon a clear fire; and when they begin to boil, throw in the wine. Boil them about fifteen minutes, during which time as the curd, or cheesy part collects, take it off with a spoon, and if the whey is not clarified enough with this quantity of wine, add a spoonful or two more; then boil it a little longer and skim it, by which means it will become sufficiently fine, and then it may be poured into a basin for use. Or it may be clarified thus: beat the white of an egg, let the whey cool, mix them together, boil them for a minute or two, and then strain off the whey through a cloth.

VINEGAR WHEY is made in the same manner as the wine whey, using vinegar instead of wine.

RENNET WHEY.—Take of new milk, one quart; rennet, a large spoonful. Put the milk into a saucepan, and when it is a little more than milk warm, mix the rennet with it; keep it on the fire in a gentle degree of heat, till the curd, which, as it separates from the serous part and collects, is taken off with a spoon, and then the whey will be fit for use.

The rennet is prepared thus:—take a calf's bag, with the curd in it, (that is the duodenum replete with congealed chyle) pick the hairs entirely out, and wash the curd, and likewise the bag very clean with water; then put the curd into the bag again, with near half a pound of salt, and let them stand in a clean glazed pan about a week; then take three pints of water and one pound of salt, boil and skim until the liquor comes to two pints, set it by, and when it is cold pour it upon the bag in the pan. When it has stood thus about a week longer, the brine or liquor (now called rennet,) will be fit for use, and keep good for several months.

TREACLE POSSET.—Take of milk, one pint; put it on the coals till it just begins to boil, then add two or three table-spoonfuls of treacle, or molasses, stirring the milk as it is poured in. When mixed, it is fit for use.

LEMONADE.—Take of the outer rind of fresh lemon-peel, about one drachm; lemon juice, one ounce; double refined sugar, two ounces; boiling water, a pint and a half. When they have stood in a stone or porcelain basin about ten minutes, strain off the liquor.

ORANGEADE.—Take of the fresh outer rind of Seville orange, one drachm; orange juice, two and a half large spoonfuls; double refined sugar, one ounce and about three quarters, or enough to make it of an agreeable sweetness; boiling water, one quart. When they have stood in a white stone or porcelain vessel about ten minutes, strain off the liquor.

THE IMPERIAL DRINK.—Take of cream of tartar, one drachm; the outer rind of fresh lemon or orange peel, half a drachm; loaf sugar, one ounce; boiling water, two pints. When they have stood in a white stone or porcelain vessel about ten minutes, strain off the liquor.

OXYCRATE.—Take of white wine vinegar, four spoonfuls; virgin honey, an ounce and a half; spring water, one quart. Mix them together in a white stone or porcelain vessel.

If honey disagrees with the patient, this drink may be sweetened with sugar instead of it.

THE VULNERARY DRINK.—Take of ground-ivy, coltsfoot, and licorice, each one ounce; elecampane, half an ounce. Boil them in four pints and a half of water, to four pints, and then strain off the liquor.

THE PECTORAL DRINK.—Take of common barley and raisins stoned, each two ounces; licorice root, half an ounce; water, two quarts. Boil the water first with the barley, then add the raisins, and afterwards, near the latter end of the boiling, the licorice. The decoction then will be

fully completed, when one quart only of the liquor will be left after straining.

BARLEY WATER.—Take of pearl barley, two ounces; water, two quarts. Wash the barley first well with some cold water; then pouring on about half a pint of water, boil it a little while, and this water, which will be colored, being thrown away, put the barley into the quantity of water above directed, first made boiling hot; boil away to half, and then strain off the liquor.

TOAST WATER.—Toast slowly a thin piece of white bread till extremely brown and hard, but not the least black; then plunge it into a jug of cold water, and cover it over an hour before used.

WATER GRUEL.—Take of oatmeal, two large spoonfuls; water, one quart. Mix them well, and boil them about ten or fifteen minutes, stirring often; then strain the gruel through a sieve, and add sugar and salt enough to make it agreeable to the taste. When it is designed as a meal, dissolve in it a little butter, and then add bread and nutmeg as occasion requires.

Or, take of the coarse part of corn meal or grist, two handfuls; water, three quarts; boil it till only two quarts remain, then strain off the liquor, and season it to the palate with salt, sugar and nutmeg, to which may be added a spoonful or two of wine.

RICE GRUEL.—Take of ground rice, two ounces; cinnamon, a quarter of an ounce; water, four pints. Boil them above half an hour, the cinnamon being put in near the latter end of the decoction; then strain the gruel through a sieve, and add of double refined sugar, (sugar of roses, or syrup of quinces) enough to make it agreeable to the patient's taste. When this is to be used as a meal, the rice must be boiled above an hour, in only a quart of water, with half the quantity of cinnamon thrown in towards the latter end of the decoction, and then wine added, as occasion requires.

RICE MILK.—Take a large tea-cupful of rice, washed nicely; water, one pint; boil it for half an hour, then add a quart of new milk; let it simmer over a slow fire till it is sufficiently done, and then add to it a little sugar and nutmeg.

PANADO.—Take of bread, one ounce; mace, one blade; water, one pint. Boil them without stirring, till they mix and turn smooth; then add a little grated nutmeg, a small piece of butter, and sugar enough to make the mixture agreeable. When butter is not approved of wine may be used in its stead.

SAGO.—Take of sago, one large spoonful; water, about three quarters of a pint. Boil them gently, stirring often, till the mixture is smooth and thick; then add two spoonfuls of wine, a little nutmeg, and sweeten it to the taste.

ARROW ROOT.—Take of the powder a large tea-spoonful; mix it in a gill of sweet milk, and pour the mixture into near a pint of boiling

water, stirring it for a few minutes, when it will be fit for use. Sweetened with loaf sugar, it is an agreeable nutriment for children afflicted with complaints of the bowels.

If made with a larger proportion of the powder and milk, and seasoned with nutmeg and cinnamon, it is adapted to the diseases of the stomach and bowels in adults.

ELDERBERRY SYRUP.—To a pint of the juice of the berries add a pound of the best Muscorado sugar, and boil it until it becomes a syrup, carefully taking off the scum, as long as any rises.

One or two table-spoonfuls of this syrup added to a pint of water, makes a wholesome and pleasant beverage.

SYRUP OF TURNIPS.—Pare and slice the turnips, placing brown sugar between every slice; let them stand a few hours, and the syrup will collect. This simple syrup has been found very useful in coughs.

TAPICOA JELLY.—Take of that fine vegetable substance, called Tapicoca, two table-spoonfuls, or in weight one ounce. Mix it with one pint and a half of pure spring water; and, when it has stood cold an hour, then boil it about an hour, with a clear, gentle fire, stirring it well, until it is dissolved and becomes transparent. Near the end of the boiling, add two tea-spoonfuls of lemon juice, a little of the peel, one tea-spoonful of common salt, and sugar sufficient to suit the taste; strain it off through a sieve, add three or four spoonfuls of white wine, a little nutmeg finely grated, mix well, and then it will be fit for use. Should wine be disagreeable to the patient, milk may be used in place of it, especially for children.

When prepared as above directed, it is both an agreeable and nutritive aliment.

CALVES' FEET JELLY.—Boil two calves-feet in one gallon of water till it comes to a quart; then strain it, and when it is cold skim the fat entirely off, and take the jelly up clean; if there is any settling at the bottom, leave it. Put the jelly into a saucepan, with a pint of mountain wine, half a pound of loaf sugar, the juice of four large lemons, and the white of six or eight eggs, beat up with the whisk; mix all well together, set the saucepan upon a clear fire, and stir the jelly till it boils. When it has boiled a few minutes, pour it through a flannel bag till it runs clear. Have now ready a large china basin, with some lemon peel in it, cut as thin as possible; let the clear jelly run upon them while warm, and from these it will acquire both an amber color and an agreeable flavor. Afterwards it may be poured into glasses.

POTATO FLUMMERY.—Take of potatoes, one pound. Boil them gently in a sufficient quantity of water, till they are brittle or tender; then take them out of the water, and peel the skins entirely off. When this is done, add salt enough to season them; mash them well, and put them into a saucepan again, with a quarter of a pint of milk and two ounces of butter; warm them a little, during which time let them be well mixed, and beat fine and smooth with a spoon. The mixture

then, which may be called flummery, will be fit for use, and may be eat either by itself or with bread.

BREAD SOUP.—Take the upper crust of a roll, the drier the better; cut it into pieces, and put it into a saucepan with a pint of water, and a piece of butter about half as big as a walnut; boil them well, every now and then stirring and beating them, till the bread is mixed; then season the soup with a very little salt, and pour it into a basin.

MUTTON BROTH.—Take of a loin of mutton, one pound; water, three pints. Put them into a saucepan, and set it upon a clear fire; throw in a little salt, and as the scum rises, take it carefully off with a spoon; then add a little onion, if there is no objection to it, and two blades of mace. Boil till the meat is very tender, then take it out, pour the broth into a basin, and when cold, skim the fat part which is congealed on the surface, entirely off; after which a part of the broth may be warmed and given to the patient as often as needful. A little boiled rice may be added here occasionally.

MUTTON BROTH, either with BARLEY or RICE.—Take of Scotch barley or rice, two large spoonfuls; water, one quart. When they have boiled for half an hour, pour the water entirely off, and add three pints of fresh water, one pound of lean scrag of mutton, and a little salt. Boil again, and take the scum off as it rises; this being done, throw in one onion of a middling size, two turnips sliced, and a little parsley; then having boiled till the meat is tender, the broth will be fit for use. If the rice is washed before it is boiled, the water need not be changed afterwards.

BEEF BROTH.—Take of lean beef, as clear of fat as possible, a quarter of a pound; water, a pint and a half; salt, sufficient to season it. When it begins to boil, skim it for five minutes; then add about two blades of mace, and continue the boiling about ten minutes longer, which being done, the broth may be poured into a basin for use.

CHICKEN BROTH.—Take a middling sized chicken, divide it into two parts, take the skin and fat entirely off, put one half into a saucepan with a quart of water, seasoned with a little salt; as the scum rises take it off, then add a blade or two of mace, and a crust of bread, and when boiled about three quarters of an hour in all, the broth will be fit for use.

BOILED CHICKEN.—Take thin slices of bread, pour upon them some of the chicken broth as before prepared, and then lay the chicken as then boiled over them. Let this be eaten without any other sauce.

BREAD PUDDING.—Take of crumbs of bread, about half a pound; new milk, about three quarters of a pint. Pour the milk boiling hot upon the bread, and let it stand about an hour covered close up; then add the yolks of two eggs, well beaten; a little grated nutmeg; about a spoonful of rose water; a little salt, and sugar also if agreeable; beat the bread well, and mix the whole together with a spoon. Tie it then close up in a clean linen cloth, and when the water boils, put

it in; boil it about three quarters of an hour, then take it out, lay it upon a plate, pour over it some melted butter, mixed with a little mountain wine, if there is no objection, and sprinkle a little sugar over all.

BATTER PUDDING.—Take of flour, six spoonfuls; milk, one pint; salt, half a tea-spoonful; beaten ginger, nutmeg, and tincture of saffron, each a tea-spoonful.

This pudding may be eat as the preceding, with a little melted butter, wine, and sugar.

When eggs are allowed, the yolks of three, and the white of one, must be beaten well together, then mixed with the above ingredients, and boiled about an hour.

RICE PUDDING.—Take of ground rice, one ounce and a half. Put it into a pint of milk, and let it boil till it is pretty thick, stirring it all the time; then pour it into a pan; stir in a quarter of a pound of sweet beef suet, chopped very fine, and two ounces of sugar. When it is cold, grate in half a nutmeg, and beat up three eggs with a spoonful of sack. Mix all well together, and pour it into a dish, first rubbed over with a little butter, and then bake it.

BOILED FLOUR.—Take a pound or two of fine flour; tie it up as tight as possible in a linen rag; dip it repeatedly in cold water, and dredge the outside with flour till a crust is formed around it, which will prevent the water soaking into it while boiling. It is then to be boiled till it becomes a hard dry mass. Two or three table-spoonfuls of this may be grated down and boiled in milk and water to a proper thickness, and sweetened to the patient's taste, and a little nutmeg or other spice may be added. This forms an excellent food in dysentery, and in bowel complaints in children.

BEEF TEA.—Cut one pound of lean beef into thin slices or shreds, and boil it in a quart of water for twenty minutes, taking off the scum as it rises. After it grows cold, the liquor should be strained, in which state it resembles a light infusion of green tea, has a very grateful flavor, and is more strengthening than other broths.

MUSTARD WHEY.—Boil one ounce and a half of mustard in powder, in a pint of milk, and an equal portion of water, till the curd be entirely separated, after which the liquid is strained through a cloth. This preparation is one of the most pleasant and efficacious forms in which mustard can be given. A tea-cupful sweetened with sugar, taken three or four times in a day, is exceedingly beneficial in low fevers as a diaphoretic cordial.

ALUM WHEY.—Boil two drachms of powdered alum in a pint of milk till it be curdled; then strain out the whey. This astringent preparation is often employed with advantage in uterine hemorrhage, and in diabetes. The dose is two or three ounces, or as much as the stomach will bear, several times in the day.

TO MULL PORT WINE.—Boil some spice in a little water till the flavor be gained; then add an equal quantity of wine, some sugar and nutmeg; boil it together, and serve with toast.

Another way:—Boil some allspice, or a bit of cinnamon, and some grated nutmeg, a few minutes, in half a pint of water; then pour to a pint of wine, add sugar to your taste, beat it up, and it will be ready.

TO MULL WHITE WINE.—Boil a pint of a good wine with a table-spoonful of allspice; beat up the yolk of an egg with a little sugar, and add to it the wine while boiling.

REFRESHING DRINKS IN FEVERS.—Boil two quarts of water with two ounces of tamarinds, an equal quantity of currants and raisins, till near a fourth be consumed. Strain it on a piece of lemon peel, which remove in an hour, as it gives a bitter taste if left long.

Tamarinds, currants, fresh or in jelly, or scalded currants, or cranberries, with cold water, make excellent drinks; a little sugar may be added, if agreeable.

LEMON WATER.—Put two slices of lemon, thinly pared, into a teapot, a small piece of the peel and some white sugar; pour in a pint of boiling water, and stop it close two hours.

APPLE WATER.—Cut two large apples in slices, and pour a quart of boiling water on them, or on roasted apples; strain, in two or three hours, and sweeten lightly

DISPENSATORY.

THE design of the following pages is, to exhibit such a list of drugs and medicines as may be necessary for private practice. They are considerably more numerous indeed than those recommended in the former part of the book, but are still greatly within the number contained in the most reformed dispensaries. The same medicine is seldom exhibited under different forms; and where different medicines answer nearly the same intention, there is commonly no more than one of them retained. Multiplying forms of medicine for the same intention tends rather to bewilder than assist the young practitioner, and the experienced physician can never be at a loss to vary his prescriptions as occasion requires. The chemical and other difficult preparations are for the most part omitted. All of them that are used by any private practitioner are not worth preparing. He will buy them much cheaper than he can make them. Great care, however, is necessary to obtain them genuine. They are often adulterated, and ought never to be purchased unless from persons of known veracity. Such of them as are in common use are inserted in the lists of drugs and medicines. Their proper doses and manner of application are mentioned in the practical part of the book, wherever they are prescribed.

Such articles of medicines as are to be found in the house or garden of almost every peasant, as barley, eggs, onions, &c. are likewise for the most part omitted. It is needless to swell a list of medicines with such things as can be obtained whenever they are wanted, and which spoil by being kept.

The preparations made and sold by distillers and confectioners are also generally left out. These people, by operating upon a larger plan, generally make things better, while it is in their power to afford them much cheaper than they can be prepared by any private hand.—The quantity ordered of every medicine is as small as could well be prepared, both to prevent unnecessary expense, and that the medicine might not spoil by keeping. Almost every medicine suffers by being kept, and should be used as soon after it has been prepared as possible. Even simple drugs are apt to spoil, and should therefore be laid in in small quantities; they either rot, are consumed by insects, or evaporate so as to lose their peculiar taste or flavour, and often become quite insignificant.

In several compositions, the ingredient on which the efficacy of the medicine principally depends is increased, while the auxiliaries, which are generally ordered in such trifling quantities as to be of no importance, are left out, or only such of them retained as are necessary to give the medicine a proper consistence, or the like.

The coloring ingredients are likewise for the most part omitted. They increase the bulk and price of the medicine; without adding any thing to its value. It would be well if they were never used at all. Medicines are often adulterated for the sake of a color. Acid and even poisonous substances are, for this purpose, sometimes introduced into those medicines which ought to be most bland and emollient. Ointment of elder, for example, is often mixed with verdigris to give it a fine green color, which entirely frustrates the intention of that mild ointment. Those who wish to obtain genuine medicines should pay no regard to their color.

Some regard is likewise paid to expense. Such ingredients as greatly increase the price of any composition, without adding considerably to its virtue, are generally either omitted, or somewhat less expensive substituted in their place. Medicines are by no means powerful in proportion to their price. The cheapest are often the best; besides, they are the least apt to be adulterated, and are always most readily obtained.

With regard to the method of compounding medicines, I have generally followed that which seemed to be the most simple and natural, mentioning the different steps of the process in the same order in which they ought to be taken, without paying an implicit regard to the method of other dispensaries.

I have followed the alphabetical order, both with regard to the simples and preparations. A more scientific method would have been agreeable to some persons, but less useful to the generality of readers. The different classes of medicine have no great dependence upon one another, and, where they have, it is hard to say which should stand first or last; no doubt the simple preparations ought to precede the more compound. But all the advantages arising from this method of arrangement do not appear equal to that single one, of being able, on the first opening of the book, to find out any article, which, by the alphabetical order, is rendered quite easy.

The dose of every medicine is mentioned, whenever it appeared necessary. When this is omitted, it is to be understood that the medicine may be used at discretion. The dose mentioned is always for an adult, unless when the contrary is expressed. It is not an easy matter to proportion the doses of medicine exactly to the different ages, constitutions, &c. of patients; but, happily for mankind, mathematical exactness here is by no means necessary.

Several attempts have been made to ascertain the proportional doses for the different ages and constitutions of patients; but, after all that can be said upon this subject, a great deal must be left to the judgment and skill of the person who administers the medicine. The following general proportions may be observed; but they are by no means intended for exact rules. A patient between twenty and fourteen may take two-thirds of the dose ordered for an adult; from fourteen to nine, one-half; from nine to six, one-third; from six to four, one-fourth; from four to two, one-sixth; from two to one, a tenth; and below one, a twelfth.

To prevent mistakes, the English name of every medicine is not only used, but the different articles are arranged according to the order of the English alphabet, and the smallest and largest dose placed opposite to the operation of each article. The doses indeed refer to adults, but may be adapted to different ages by attending to the rules laid down in the opposite page. Short cautions are occasionally inserted under such articles as require to be used with care.

Though a greater variety of medicines is contained in this than in any former edition of the Domestic Medicine, yet the author would advise those who peruse it, as far as possible, to adhere to simplicity in practice. Diseases are not cured by multiplicity of medicines, but by their proper application. A few simples, judiciously administered, and accompanied with a proper regimen, will do more good than a farrago of medicines employed at random.

A LIST

OF THE

MEDICINES COMMONLY USED IN PRACTICE,

WITH THEIR PARTICULAR VIRTUES AND PROPER DOSES.

* * Explanation of the Abbreviations used in the following Doses: scr. scruple, scrs. scruples, dr. drachm, drs. drachms, oz. ounce, drps. drops, gr. grain, grs. grains, grad. gradually.

Names.	Properties.	Doses.
ACACIA, the expressed juice } from - - - }	Demulcent. - - -	1 scr. to 1 dr.
Acid, the acetous - - -	Refrigerant, &c. - - -	1 scr. - 1 dr.
—, muriatic - - -	Antiseptic, &c. - - -	10 drps. - 40 drps.
—, nitrous, diluted - - -	Tonic, Febrifuge, &c. - - -	15 drps. - 40 drps.
—, vitriolic, diluted - - -	Tonic, Antiseptic. - - -	15 drps. - 40 drps.
Æther, vitriolic - - -	Anodyne. - - -	30 drps. - 2 drs.
Æthiops's mineral - - -	Alterative. - - -	10 grs. - 30 grs.
<i>Agaric, used externally as a styptic, to staunch blood.</i>		
Aloes - - -	Emenagogue, &c. - - -	5 grs. - 30 grs.
Alum. - - -	Astringent. - - -	6 grs. - 20 grs.
—, burned - - -	Escharotic, &c. - - -	3 grs. - 12 grs.
Amber, prepared - - -	Antispasmodic. - - -	$\frac{1}{2}$ dr. - 1 dr.
Ammoniac, gum - - -	Expectorant. - - -	5 grs. - 30 grs.
—, milk of - - -	Expectorant. - - -	$\frac{1}{2}$ oz. - 1 oz.
Angelica, the root powdered - - -	Stimulant, &c. - - -	$\frac{1}{2}$ dr. - $1\frac{1}{2}$ dr.
Anise, the seeds - - -	Carminative. - - -	10 grs. - 1 dr.
Antimony, crude - - -	Febrifuge, &c. - - -	10 grs. - 1 dr.

<i>Names.</i>	<i>Properties.</i>	<i>Doses.</i>
Antimony, calcined - - -	Febrifuge. - - -	1 scr. to 1 dr.
—, cinnabar of - - -	Diaphoretic. - - -	10 grs. - 1 scr.
—, glass of - - -	Emetic, never used. - - -	$\frac{1}{2}$ gr. - 2 grs.
—, tartarized - - -	Emetic. - - -	$\frac{1}{2}$ gr. - 4 grs.
Asafoetida, - - -	{ Emenagogue, Expectorant, and Antispasmodic. }	5 grs. - $\frac{1}{2}$ dr.
—, milk of - - -		
Asarum, - - -	Antispasmodic, &c. - - -	$\frac{1}{2}$ oz. - 1 oz.
	Emetic and Errhine. - - -	3 grs. - 5 grs.
Balsam of capivi - - -	Diuretic, &c. - - -	20 drps. - 60 drps.
— Canadian - - -	Diuretic, &c. - - -	$\frac{1}{2}$ scr. - $\frac{1}{2}$ dr.
— of Peru - - -	Expectorant, Stimulant. - - -	—
— of Tolu - - -	Stimulant, Expectorant. - - -	15 grs. - 2 scrs.
Bark, cascarilla - - -	Tonic, &c. - - -	10 grs. - 1 dr.
—, Peruvian, powder of - - -	Tonic. - - -	1 scr. - 2 drs.
Bear's foot, powder of the leaves - - -	Narcotic. - - -	10 grs. - 20 grs.
Benzoïn, resin of, not employed internally, and principally for obtaining Benzoïc acid.		
Bistort, powder of the root - - -	Astringent. - - -	1 scr. - 1 dr.
Blessed Thistle - - -	Tonic, Emetic. - - -	10 grs. - 1 dr.
—, expressed } juice of - - -	{ The same. - - -	2 drs. - 2 oz.
Bole, Armenian - - -		
—, French - - -	Astringent. - - -	10 grs. - 2 drs.
	The same. - - -	—
Borax, rarely used internally - - -	Detergent. - - -	10 grs. - 40 grs.
Broom, ashes of the tops - - -	Diuretic. - - -	1 scr. - 1 dr.
Burdock, powder of the root - - -	Sudorific, &c. - - -	10 grs. - 1 dr.
Calamine stone, levigated, used externally in Turner's cerate.		
Calomel - - -	{ Alterative. - - -	1 gr. - 3 grs.
Camphor - - -	Purgative. - - -	3 grs. - 12 grs.
Canella alba, powder of - - -	Narcotic, Diaphoretic. - - -	2 grs. to $\frac{1}{2}$ 1 scr.
Cantharides - - -	Tonic, Carminative. - - -	1 scr. - 2 drs.
Cardamoms - - -	Stimulant, Diuretic. - - -	$\frac{1}{2}$ gr. - 4 grs.
Caraway seeds - - -	Carminative. - - -	5 grs. - 20 grs.
Carrot, seed of the wild - - -	Carminative. - - -	10 grs. - 40 grs.
Cascarilla bark - - -	Carminative. - - -	1 scr. - 1 dr.
Cassia, the pulp - - -	Tonic. - - -	10 grs. - 40 grs.
Castor - - -	Laxative. - - -	2 drs. - 1 oz.
	Antispasmodic. - - -	8 grs. - 1 dr.
Caustic, lunar; used externally as an escharotic; internally, gr. $\frac{1}{8}$, cautiously increased to grs. ij. in epilepsy.		
Catechu - - -	Astringent. - - -	15 grs. - 30 grs.
Camomile, in powder - - -	Tonic. - - -	20 grs. - 1 dr.
Centaury, the lesser - - -	Tonic. - - -	1 scr. - 1 dr.
Chalk - - -	Absorbent. - - -	20 grs. - 2 scrs.
Cinnamon - - -	Carminative. - - -	5 grs. - 1 dr.
Colocynth - - -	Violently Cathartic. - - -	2 grs. - 10 grs.
Columbo - - -	Tonic. - - -	10 grs. - 1 dr.
Confection, aromatic - - -	Cordial. - - -	10 grs. - 2 scrs.
—, opiate - - -	Anodyne. - - -	10 grs. - 2 scrs.
Crab's claws, prepared - - -	Absorbent. - - -	10 grs. - 1 dr.
Conserve of roses - - -	Astringent. - - -	1 dr. - 1 oz.
Contrayerva - - -	Febrifuge. - - -	10 grs. - 2 scrs.
Coriander seed - - -	Carminative. - - -	15 grs. - 1 dr.
Cowhage, - - -	{ Vermifuge. - - -	{ The spiculæ of one pod mixed with honey or molasses.
Cummin seed - - -	Stimulant. - - -	1 scr. - 1 dr.
Dandelion, expressed juice of - - -	Diuretic. - - -	1 oz. - 3 oz.
Decoction of hartshorn - - -	Demulcent. - - -	{ Half a pint repeated as often as necessary.

<i>Names.</i>	<i>Properties.</i>	<i>Doses.</i>
Decoction of broom tops - - -	Diuretic. - - -	1 oz. to a pint of water; to be taken by teacup- ful.
----- of Peruvian bark - - -	Tonic. - - -	
----- of the inner bark } of the elm }	Diuretic. - - -	1 oz. to 4 oz.
----- of sarsaparilla - - -	Alterative & diaphoretic. - - -	4 oz. - 10 oz. daily
----- of sarsaparilla, } compound }	Alterative & diaphoretic. - - -	4 oz. - 16 oz. daily
----- of guaiacum - - -	Diaphoretic. - - -	3 drachms to a pint of water. A pint daily.
Deadly night shade - - -	Narcotic, gr. $\frac{1}{2}$ to grs. ij. of the	
Dragon's blood - - -	Astringent. - - -	10 grs. - 2 scrs.
Earth, fuller's, use external } in excoriations }	Astringent. - - -	
Electuary of cassia - - -	Aperient. - - -	1 dr. - 1 oz.
----- of scammony - - -	Purgative. - - -	20 grs. - 2 drs.
----- lenitive, or of senna - - -	Purgative. - - -	30 grs. - 6 drs.
Elixir of vitriol - - -	Tonic. - - -	15 drps. - 50 drps.
Elecampane, powder of the root - - -	Stimulant. - - -	20 grs. - 1 dr.
Extract of broom-tops - - -	Diuretic. - - -	$\frac{1}{2}$ dr. - 1 dr.
----- Peruvian bark - - -	Tonic. - - -	$\frac{1}{2}$ grs. - $\frac{1}{2}$ dr.
----- cascarilla - - -	Tonic. - - -	10 grs. - $\frac{1}{2}$ dr.
----- camomile - - -	Tonic. - - -	10 grs. - 1 dr.
----- colocynth comp. - - -	Cathartic. - - -	5 grs. - 25 grs.
----- gentian - - -	Stomachic. - - -	10 grs. - $\frac{1}{2}$ dr.
----- hemlock - - -	Alterative. - - -	2 grs. - 10 grs.
----- liquorice - - -	Demulcent. - - -	1 dr. - $\frac{1}{2}$ oz.
----- logwood - - -	Astringent. - - -	10 grs. - $\frac{1}{2}$ dr.
----- black hellebore - - -	Emenagogue. - - -	3 grs. - 10 grs.
----- jalap - - -	Purgative. - - -	5 grs. - 20 grs.
----- guaiacum - - -	Diaphoretic. - - -	10 grs. - 20 grs.
----- white poppies - - -	Anodyne. - - -	1 gr. - 5 grs.
----- rue - - -	Emenagogue. - - -	10 grs. - 20 grs.
----- savin - - -	The same. - - -	10 grs. - 30 grs.
----- senna - - -	Aperient. - - -	10 grs. - 30 grs.
----- wormwood - - -	Tonic. - - -	10 grs. - 30 grs.
Fern, powder of the root - - -	Vermifuge. - - -	$\frac{1}{2}$ dr. - $\frac{1}{2}$ oz.
Fennel seed - - -	Aromatic. - - -	20 grs. - 1 dr.
Foxglove, powder of the leaves - - -	Diuretic. - - -	$\frac{1}{2}$ gr. - 3 grs.
		or a drachm infused in a pint of boiling water, of which a dose is } 1 oz.
		(Administered with caution.)
Frankincense - - -	- - -	10 grs. - 30 grs.
Flowers of camomile, powder of - - -	Tonic. - - -	10 grs. - 1 dr.
----- elder - - -	Cathartic, &c. - - -	} Ad libitum.
----- rosemary - - -	Emenagogue. - - -	
----- damask roses, rarely employed unless to make rose-water. }	Laxative. - - -	
----- red ditto, in infusion - - -	Astringent. - - -	
Fruits. Almonds - - -	Demulcent. - - -	}
----- Figs, dried - - -	Aperient. - - -	
----- French prunes - - -	Aperient. - - -	
----- Tamarinds - - -	Aperient. - - -	
Galbanum - - -	Deobstruent. - - -	10 grs. - $\frac{1}{2}$ dr.
Galls - - -	Astringent. - - -	10 grs. - 20 grs.
Garlic, cloves of - - -	Expectorant. - - -	No. 1. - No. 6.
Gentian - - -	Tonic. - - -	10 grs. - 40 grs.
Germander - - -	Tonic. - - -	15 grs. - 1 dr.

Names.				Properties.				Doses.			
Ginger	-	-	-	Carminative.	-	-	-	5 grs.	to	20 grs.	
Ginseng	-	-	-					20 grs.	.	30 grs.	
Guaiacum, wood of	-	-	-	Diaphoretic.	-	-	-				
—, gum-resin	-	-	-	<i>The same.</i>	-	-	-	10 grs.	-	30 grs.	
Gum-arabic	-	-	-	Demulcent.	-	-	-	15 grs.	-	1 dr.	
— gamboge	-	-	-	Hydragogue.	-	-	-	2 grs.	-	12 grs.	
Hartshorn, prepared	-	-	-	Emollient.	-	-	-	20 grs.	-	1 dr.	
—, spirits of	-	-	-					10 drps.	-	40 drps.	
Hellebore, black	-	-	-	Emenagogue.	-	-	-	5 grs.	-	10 grs.	
—, white	-	-	-	Emetic, &c.	-	-	-	1 gr.	-	5 grs.	
Hemlock	-	-	-	Narcotic.	-	-	-				
								Should always be begun with very small doses, as one grain or less, and gradually increased as the constitution will bear. See extract of.			
Hiera picra	-	-	-	Purgative.	-	-	-	10 grs.	-	20 grs.	
Honey of squills	-	-	-	Diuretic.	-	-	-	10 grs.	-	40 grs.	
— of roses	-	-	-	Astringent.	-	-	-	1 dr.	-	2 drs.	
Hoffman's anodyne liquor	-	-	-	Anodyne, &c.	-	-	-	20 drps.	-	60 drps.	
Infusion of gentian, compound	-	-	-	Tonic.	-	-	-	1 oz.	-	3 oz.	
— roses	-	-	-	Astringent.	-	-	-	2 oz.	-	8 oz.	
— senna	-	-	-	Aperient.	-	-	-	$\frac{1}{2}$ oz.	-	2 oz.	
Ipecacuanha	-	-	-	{ Emetic, and expectorant, gr. i. to iiij.				10 grs.		30 grs.	
Iris, florentine	-	-	-								
Iron, rust of	-	-	-	Tonic.	-	-	-	1 scr.	-	1 dr.	
—, ammoniated	-	-	-	<i>The same.</i>	-	-	-	5 grs.	-	20 grs.	
—, tartarized	-	-	-	Tonic.	-	-	-	2 grs.	-	10 grs.	
Jalap, powder of	-	-	-	Purgative.	-	-	-	10 grs.	-	40 grs.	
Juniper, powder of the berries	-	-	-	Diuretic.	-	-	-	20 grs.	-	1 dr.	
Kino, gum	-	-	-	Astringent.	-	-	-	10 grs.	-	30 grs.	
Lead, white	-	-	-	{ Astringent.				$\frac{1}{2}$ gr.		2 grs.	
—, sugar of	-	-	-								
Lichen, ash-colored, ground	-	-	-	Demulcent.	-	-	-	10 grs.	-	40 grs.	
— Icelandic, a strong decoction of	-	-	-	{ <i>The same.</i>				1 oz.		4 oz.	
Lime-water	-	-	-								
Lixivium of tartar	-	-	-	Refrigerant.	-	-	-	4 oz.	-	8 oz.	
	-	-	-	Lithontriptic.	-	-	-	15 drps.	-	40 drps.	
Linseed	-	-	-	Demulcent.	-	-	-				
								{ An infusion of 1 ounce to a quart of water, may be used at pleasure.			
Liquorice, root of	-	-	-	Demulcent.	-	-	-	$\frac{1}{2}$ dr.	-	1 dr.	
Madder powder	-	-	-					$\frac{1}{2}$ dr.	-	1 dr.	
Mace	-	-	-	Stomachic.	-	-	-	10 grs.	-	20 grs.	
Magnesia	-	-	-	Antacid.	-	-	-	$\frac{1}{2}$ dr.	-	2 drs.	
—, calcined	-	-	-	<i>The same.</i>	-	-	-	—	-	—	
Manna	-	-	-	Aperient.	-	-	-	$\frac{1}{2}$ oz.	-	2 oz.	
Marsh-mallows, root and leaves of	-	-	-	{ Demulcent.				$\frac{1}{2}$ dr.		1 dr.	
Mastich, gum	-	-	-								
Mercury, crude	-	-	-	Carminative.	-	-	-	10 grs.	-	30 grs.	
—, calcined	-	-	-	Alterative.	-	-	-	$\frac{1}{2}$ gr.	-	2 grs.	
—, with chalk	-	-	-	Alterative, Antisyphilitic.	-	-	-	10 grs.	-	30 grs.	
—, corrosive sublimate	-	-	-	<i>The same.</i>	-	-	-	$\frac{1}{2}$ gr.	-	$\frac{1}{2}$ gr.	
—, cinnabar of	-	-	-	Alterative, &c.	-	-	-	10 grs.	-	30 grs.	
—, red precipitate of	-	-	-	{ Use chiefly external.							
—, white ditto	-	-	-								
—, yellow emetic	-	-	-	Sternutatory.	-	-	-	1 gr.	-	3 grs.	

<i>Names.</i>		<i>Properties.</i>	<i>Doses.</i>	
Mezereon	- - -	Sialogogue in Decoct.	- - -	To a pint of water, 2 drs.
Millipèdes	- - -	Expectorant.	- - -	20 grs. to 2 drs.
Musk	- - -	Antispasmodic.	- - -	5 grs. - 40 grs.
Mustard seed	- - -	Stimulant. Emetic.	- - -	1 dr. - 1 oz.
Myrrh, gum-	- - -	Expectorant.	- - -	10 grs. - 1 dr.
Nitre, purified	- - -	Diuretic.	- - -	10 grs. - 30 grs.
Nutmeg	- - -	Stomachic.	- - -	6 grs. - $\frac{1}{2}$ dr.
Oil of Almonds	- - -	Demulcent.	- - -	$\frac{1}{2}$ oz. - 1 oz.
— amber, rectified	- - -	Antispasmodic.	- - -	10 drps. - 30 drps.
— anniseed	- - -	Carminative.	- - -	1 drp. - 5 drps.
— castor	- - -		- - -	2 drs. - 1 oz.
— cinnamon	- - -	Stimulant.	- - -	1 drp. - 3 drps.
— juniper	- - -	Diuretic.	- - -	2 drps. - 10 drps.
— lemon peel	- - -		- - -	2 drps. - 5 drps.
— linseed	- - -	Demulcent.	- - -	$\frac{1}{2}$ oz. - 1 oz.
— olive	- - -	Demulcent, Laxative.	- - -	$\frac{1}{2}$ oz. - 1 oz.
— palm	- - -	Use external.	- - -	
— peppermint	- - -	Stimulant, &c.	- - -	1 drp. - 3 drps.
— turpenne	- - -	{ Diuretic. Externally, } stimulant.	- - -	10 drps. - 30 drps.
Onion, expressed juice of	- - -	A powerful diuretic.	- - -	$\frac{1}{2}$ oz. - 2 oz.
Opium	- - -	Narcotic.	- - -	$\frac{1}{2}$ gr. - 2 grs.
Opoponax	- - -	Emenagogue.	- - -	10 grs. - 30 grs.
Oyster-shells, prepared	- - -	Absorbent.	- - -	$\frac{1}{2}$ dr. - 2 drs.
Oxymel of colchicum	- - -	Expectorant.	- - -	$\frac{1}{2}$ dr. - 1 dr.
— of squills	- - -	Diuretic.	- - -	$\frac{1}{2}$ dr. - 1 dr.
Pennyroyal	- - -	Emenagogue.	- - -	
Peppermint	- - -	Stimulant.	- - -	
Petroleum	- - -	Antispasmodic.	- - -	10 drps. - 30 drps.
Pills, aloetic	- - -	Purgative.	- - -	10 grs. - 30 grs.
—, of the gums	- - -	Diuretic.	- - -	10 grs. - 30 grs.
—, mercurial	- - -	Antisyphilitic.	- - -	10 grs. - 20 grs.
Pitch, Burgundy	- - -		- - -	
Pomegranate, powder of	- - -		- - -	20 grs. - 1 dr.
Poppy heads	- - -	Anodyne.	- - -	
Powder, antimonial	- - -	Febrifuge.	- - -	3 grs. - 6 grs.
May be taken according to the directions for James's powder, with which, in effects, it nearly coincides.				
— of contrayerva, compound	- - -	The same.	- - -	15 grs. - 30 grs.
— of chalk, compound	- - -	Absorbent.	- - -	20 grs. - 40 grs.
—, with opium	- - -	Absorbent and anodyne.	- - -	10 grs. - 40 grs.
Powder of ipecacuanha, com- } pound, or Dover's powder. }	- - -	Diaphoretic.	- - -	10 grs. - 30 grs.
Quassia	- - -	Tonic.	- - -	5 grs. - 30 grs.
(One drachm to a pint of water for an infusion.)				
Quince seeds, mucilage of	- - -	Demulcent.	- - -	At pleasure, to obtund acrimony.
Rhubarb, powder of	- - -	Purgative.	- - -	10 grs. - 40 grs.
Resin, yellow	- - -	Diuretic.	- - -	3 grs. - 20 grs.
Rue powder	- - -	Emenagogue.	- - -	20 grs. - 40 grs.
Sassafras	- - -	Diaphoretic, Altera- } tive, &c.	- - -	1 scr. - 1 dr.
Savin	- - -	Emenagogue.	- - -	10 grs. - 30 grs.
St. John's wort	- - -	Diaphoretic.	- - -	20 grs. - 1 dr.
Saffron	- - -	Cordial, &c.	- - -	5 grs. - 20 grs.
Sagapenum	- - -		- - -	10 grs. - 30 grs.
Sal ammoniac	- - -	Stimulant.	- - -	10 grs. - 30 grs.
Salt, Epsom	- - -	Aperient.	- - -	2 drs. - 1 oz.
—, Glauber	- - -	Aperient.	- - -	4 drs. - 2 oz.

<i>Names.</i>	<i>Properties.</i>	<i>Doses.</i>
Salt of hartshorn - - -	Cordial. - - -	10 grs. to 20 grs.
— Polychrest - - -	Aperient. - - -	20 grs. - ½ oz.
— Rochel - - -	Aperient. - - -	2 scrs. - 1 oz.
— of tartar - - -	Aperient. - - -	10 grs. - 30 grs.
Saunders, red - - -	Astringent. - - -	½ dr. - 1 dr.
Sarsaparilla, powder of - -	Alterative. - - -	20 grs. - 40 grs.
Scammony - - -	Cathartic. - - -	5 grs. - 20 grs.
Seneka - - -	Diaphoretic. - - -	20 grs. - 40 grs.
Senna - - -	Aperient. - - -	20 grs. - 40 grs.
Soap - - -	Lithontriptic. - - -	20 grs. - ½ oz.
— lees - - -	<i>The same.</i> - - -	10 drps. - 30 drps.
Spearmint - - -	Stimulant. Cordial. - -	10 grs. - 2 scrs.
Scurvy-grass, expressed juice	Antiscorbutic. - - -	1 oz. - 4 oz.
Snake-root - - -	Diaphoretic. - - -	20 grs. - 40 grs.
Sorrel, juice of, depurated -	Antiscorbutic. - - -	2 oz. - 4 oz.
Spirit of lavender - - -	Cordial, Stimulant. - -	1 dr. - 2 drs.
— of mindererus - - -	Diaphoretic. - - -	1 dr. - 1 oz.
— sweet, of vitriol - - -	Tonic. - - -	15 drps. - 40 drps.
— of nitre - - -	Diuretic. - - -	15 drps. - 40 drps.
— of sal ammoniac - - -	Diaphoretic, &c. - - -	15 drps. - 40 drps.
— compound - - -	- - -	- - -
— fetid - - -	Antispasmodic, &c. - -	- - -
Steel, filings of - - -	Tonic, Emenagogue. - -	5 grs. - 1 scr.
Spermaceti - - -	Demulcent. - - -	20 grs. - 1 dr.
Sponge, burned - - -	Deobstruent. - - -	20 grs. - 1 dr.
Storax - - -	Astringent, &c. - - -	10 grs. - ½ dr.
Sulphur - - -	Cathartic, and diaphoretic.	20 grs. - 1 dr.
—, precipitated, of antimony	Alterative. - - -	1 gr. - 4 grs.
Squill, dried powder - - -	Diuretic. - - -	1 gr. - 3 grs.
—, fresh - - -	<i>The same.</i> - - -	5 grs. - 15 grs.
Syrup of poppies - - -	Anodyne. - - -	½ dr. - ½ oz.
— of buckthorn - - -	Cathartic. - - -	1 dr. - 2 drs.
— of ginger - - -	Carminative. - - -	1 dr. - ½ oz.
— of meadow saffron - - -	Diuretic, &c. - - -	1 dr. grad. to 1 oz.
— of violets - - -	Gently laxative. - - -	1 dr. - 2 drs.
— of poppies - - -	Anodyne: To children, -	1 dr. - 2 oz.
— 's in general - - -	- - -	1 dr. - 2 drs.
Tar - - -	Pulmonary. - - -	5 grs. - 1 scr.
—, water of - - -	- - -	A pint daily.
Tartar, cream of - - -	Refrigerant and aperient.	2 drs. - 1 oz.
—, emetic - - -	Alterative. - - -	⅛ gr. - ½ gr.
— - - -	An Emetic. - - -	1 gr. - 3 grs.
Terra japonica - - -	Astringent. - - -	20 grs. - 40 grs.
Tin, powder of - - -	Anthelmintic. - - -	20 grs. - 1 dr.
Tincture of aloes - - -	Purgative. - - -	½ oz. - 1 oz.
—, compound - - -	<i>The same.</i> - - -	½ dr. - 2 drs.
— of asafetida - - -	Antispasmodic. - - -	½ dr. - 2 drs.
— of Benzoin, compound - -	Vulnerary. - - -	10 drps. - 40 drps.
— of cantharides - - -	Diuretic. - - -	10 drps. - 40 drps.
— of cardamoms - - -	Carminative. - - -	1 dr. - ½ oz.
— of castor - - -	- - -	½ dr. - 1½ drs.
— of catechu - - -	Astringent. - - -	1 dr. - 2 drs.
— of Peruvian bark - - -	Tonic. - - -	1 dr. - ½ oz.
— of iron, muriated - - -	Tonic. - - -	10 drps. - 60 drps.
— of Calumba - - -	Tonic. - - -	1 dr. - 3 drs.
— of gentian, compound - -	Tonic. - - -	1 dr. - 3 drs.
— of guaiacum volatile - -	Diaphoretic. - - -	1 dr. - 3 drs.
— of black hellebore - - -	Emenagogue. - - -	1 scr. - 1 dr.
— of jalap - - -	Purgative. - - -	1 dr. - ½ oz.
— of myrrh - - -	Emenagogue. - - -	1 scr. - 1 dr.
— of opium - - -	Narcotic. - - -	10 drps. - 40 drps.
— camphorated, } or paregoric elixir }	Anodyne and antispas- modic. - - - }	1 dr. - 3 drs.

<i>Names.</i>		<i>Properties.</i>	<i>Doses.</i>	
Tincture of rhubarb	- -	Purgative, Stomachic.	$\frac{1}{2}$ oz.	to 2 oz.
— of senna	- -	Cathartic, Stomachic.	2 drs.	1 oz.
— of snake-root	- -	Diaphoretic, &c.	1 dr.	2 drs.
— of valerian	- -	Antispasmodic.	1 dr.	3 drs.
— volatile	- -	The same and stimulant.	$\frac{1}{2}$ dr.	2 drs.
Tobacco, an infusion of, 1 drachm to a pint of water; should be administered by table spoons-ful; powerfully diuretic; or in form of clyster.				
Tormentil, powder of	- -	Astringent.	10 grs.	1 dr.
Turmeric	- -	- - -	20 grs.	1 dr.
Turpentine, spirit of	- -	Diuretic.	10 drps.	30 drps.
—, Venice	- -	The same.	20 grs.	1 dr.
Tutty, levigated	- -	Used externally in ointments and cerates.		
Uva ursi, in powder	- -	Lithontriptic.	20 grs.	1 dr.
Valerian, wild, powder of	- -	Stimulant, Antispasmodic.	20 grs.	2 drs.
Vinegar, distilled	- -	Refrigerant, Antiseptic.	2 drs.	1 oz.
— of squills	- -	Diuretic.	10 drps.	50 drps.
—, —	- -	As an emetic.	$\frac{1}{2}$ oz.	1 oz.
Verdigris	- -	Violently emetic.	1 gr.	2 grs.
Vitriol, white	- -	As a Tonic.	2 grs.	5 grs.
—, —	- -	{ As a quickly operating emetic. }	20 grs.	1 dr.
—, blue	- -			
—, —	- -	Emetic.	1 gr.	3 grs.
Watercress, expressed juice of	- -	Antiscorbutic.	$\frac{1}{2}$ oz.	2 oz.
— trefoil	- -	- - -	$\frac{1}{2}$ dr.	1 dr.
Waters, any of the simple distilled	- -	Used as vehicles.	$\frac{1}{2}$ oz.	4 oz.
Wax, white	- -	{ Demulcent and emollient. }	20 grs.	1 dr.
—, yellow	- -			
Wormwood, expressed juice	- -	Vermifuge, Tonic.	$\frac{1}{2}$ oz.	2 oz.
White lead	- -	Astringent.	1 gr.	3 grs.
Wild cucumber	- -	Cathartic, Hydragogue.	{ $\frac{1}{2}$ gr. to grs. ij. of the extract. }	
Wine, aloetic	- -	Purgative.		
—, antimonial	- -	Emetic.	20 drps.	2 drs.
—, ipecacuanha	- -	Emetic.	1 dr.	$\frac{1}{2}$ oz.
—, rhubarb	- -	Purgative.	$\frac{1}{2}$ oz.	2 oz.
Zedoary	- -	Stomachic.	10 grs.	40 grs.
Zinc, flowers of	- -	Tonic, Antispasmodic.	3 grs.	10 grs.

MEDICINAL PREPARATIONS.

BALSAMS.

THE subject of this section is not the natural balsams, but certain compositions, which, from their being supposed to possess the balsamic qualities, generally go by that name.

This class of medicines was formerly very numerous, and held in great esteem. Modern practice, however, has justly reduced it to a very narrow compass.

Anodyne Balsam.—Take of white Spanish soap, one ounce; opium, unprepared, two drachms; rectified spirit of wine, nine ounces. Digest them together in a gentle heat for three days; then strain off the liquor, and add to it three drachms of camphor.

This balsam is intended to ease pain. It is of service in violent strains and rheumatic complaints, when not attended with inflammation. It must be rubbed with a warm hand on the part affected; or a linen rag moistened with it may be applied to the part, and renewed every third or fourth hour, till the pain abates. If the opium is left out, this will be the *Saponaceous Balsam*.

The vulnerary Balsam. (Tincture of Benjamin.)—Take of benzoin, powdered, three ounces; balsam of Peru, two ounces; hepatic aloes, in powder, half an ounce; rectified spirits of wine, two pints. Digest them in a gentle heat for three days, and then strain the balsam.

This balsam, or rather tincture, is applied externally to heal recent wounds and bruises. It is likewise employed internally to remove coughs, asthmas, and other complaints of the breast. It is said to ease the colic, cleanse the kidneys, and to heal internal ulcers, &c. The dose is from twenty to sixty drops.

This, though a medicine of some value, does not deserve the extravagant encomiums which have been bestowed on it. It has been celebrated under the different names of *The Commander's Balsam*, *Persian Balsam*, *Balsam of Berne*, *Wade's Balsam*, *Friar's Balsam*, *Jesuit's Drops*, *Turlington's Drops*, &c.

BOLUSES.

As boluses are intended for immediate use, volatile salts, and other ingredients improper for being kept, are admitted into their composition. They are generally composed of powders, with a proper quantity of syrup, conserve, or mucilage. The lighter powders are commonly made up with syrup, and the more ponderous, as mercury, &c., with conserve; but those of the lighter kind would be more conveniently made up with mucilage, as it increases their bulk less than the other additions, and likewise occasions the medicine to pass down more easily.

Astringent Bolus.—Take of alum, in powder, fifteen grains; gum kino, five grains; syrup, a sufficient quantity to make a bolus.

In an excessive flow of the *menses*, and other violent discharges of blood, proceeding from relaxation, this bolus may be given every four or five hours, till the discharge abates.

Diaphoretic Bolus.—Take of gum guaiacum, in powder, ten grains; flowers of sulphur and cream of tartar, of each one scruple; simple syrup, a sufficient quantity.

In rheumatic complaints, and disorders of the skin, this bolus may be taken twice a-day. It will also be of service in the inflammatory quinsy.

Mercurial Bolus.—Take of calomel, six grains; conserve of roses, half a drachm. Make a bolus.

Where mercury is necessary, this bolus may be taken twice or thrice a-week. It may be taken over night; and if it does not operate, a few grains of jalap, or half an ounce of Epsom salts will be proper next day to carry it off.

Bolus of Rhubarb and Mercury.—Take of the best rhubarb, in powder, from a scruple to half a drachm; of calomel, from four to six grains; simple syrup, a sufficient quantity to make a bolus.

This is a proper purge in hypochondriac constitutions; but its principal intention is to expel worms. Where a stronger purge is necessary, jalap may be used instead of the rhubarb.

Pectoral Bolus.—Take of spermaceti, a scruple; gum ammoniac, ten grains; salt of hartshorn, six grains; simple syrup, as much as will make them into a bolus.

This bolus is given in colds and coughs of long standing, asthmas, and beginning consumptions of the lungs. It is generally proper to bleed the patient before he begins to use it.

CATAPLASMS AND SINAPISMS.

CATAPLASMS possess few or no virtues superior to a poultice, which may be so made, as, in most cases, to supply their place. They are chiefly intended either to act as discutients, or to promote suppuration; and as they may be of service in some cases, we shall give a specimen of each kind.

Discutient Cataplasma.—Take of barleymeal, six ounces; fresh hemlock leaves, bruised, two ounces; vinegar, a sufficient quantity. Boil the meal and hemlock in the vinegar for a little time, and then add two drachms of the sugar of lead.

Ripening Cataplasma.—Take of white lily-root, four ounces; fat figs and raw onions, bruised, of each one ounce; yellow basilicum ointment, two ounces; gum galbanum, half an ounce; linseed-meal, as much as necessary. Boil the roots along with the figs in a sufficient quantity of water; then bruise and add to them the other ingredients, so as to form the whole into a soft cataplasma. The galbanum must be previously dissolved with the yolk of an egg.

Where it is necessary to promote suppuration, this cataplasma may be used by those who choose to be at the trouble and expense of making it. For my part, I have never found any application more proper for this purpose than a poultice of bread and milk, with a sufficient quantity of either boiled or raw onion in it, and softened with oil or fresh butter.

Sinapisms.—Sinapisms are employed to recall the blood and spirits to a part, as in the palsy and atrophy. They are also of service in deep-seated pains, as the sciatica, &c. When the gout seizes the head or the stomach, they are applied to the feet to bring the disorder to those parts. They are likewise applied to the patient's soles in the low state of fevers. They should not be suffered to lie on, however, till they have raised blisters, but till the parts become red, and will continue so when pressed with the finger.

The sinapism is only a poultice made with vinegar instead of milk, and rendered warm and stimulating by the addition of mustard, horse-radish, or garlic. The common sinapism is made by taking crumb of bread and mustard-seed in powder, of each equal quantities; strong vinegar, as much as is sufficient, and mixing them so as to make a poultice. When sinapisms of a more stimulating nature are wanted, a little bruised garlic may be added to the above.

CLYSTERS.

THIS class of medicines is of more importance than is generally imagined. Clysters serve not only to evacuate the contents of the belly, but also to convey very active medicines into the system. Opium, for example, may be administered in this way when it will not sit upon the stomach, and also in larger doses than at any time it can be taken by the mouth. The Peruvian bark may likewise be, with good effect, administered in form of clyster to persons who cannot take it by the mouth. A simple clyster can seldom do hurt, and there are many cases where it may do much good. A clyster even of warm water, by serving as a fomentation to the parts, may be of considerable service in inflammation of the bladder, and the lower intestines, &c.

Some substances, as the smoke of tobacco, may be thrown into the bowels in this way, which cannot be done by any other means whatever. This may be easily effected by means of a pair of hand-bellows, with an apparatus fitted to them for that purpose.

The use of clysters is not merely confined to medicines. Aliment may also be conveyed in this way. Persons unable to swallow, have been, for a considerable time, supported by clysters.

Emollient Clyster.—Take of linseed-tea and new milk, each six ounces. Mix them.

If fifty or sixty drops of laudanum be added to this, it will supply the place of the *Anodyne Clyster*.

Laxative Clyster.—Take of milk and water, each six ounces; sweet oil or fresh butter, and brown sugar, of each two ounces. Mix them.

If an ounce of Glauber's salt, or two table-spoonfuls of common salt, be added to this, it will be the *Purging Clyster*.

Carminative Clyster.—Take of camomile flowers, an ounce; anise-seeds, half an ounce. Boil in a pint and a half of water to one pint.

In hysteric and hypochondriac complaints, this may be administered instead of the *Fætid Clyster*, the smell of which is so disagreeable to most patients.

Oily Clyster.—To four ounces of the infusion of camomile flowers, add an equal quantity of Florence oil.

This clyster is beneficial in bringing off the small worms lodged in the lower parts of the alimentary canal. When given to children, the quantity must be proportionably lessened.

Starch Clyster.—Take jelly of starch, four ounces; linseed oil, half an ounce. Liquefy the jelly over a gentle fire, and then mix in the oil.

In the dysentery or bloody flux, this clyster may be administered after every loose stool, to heal the ulcerated intestines, and blunt the sharpness of corroding humors. Forty or fifty drops of laudanum may be occasionally added; in which case, it will generally supply the place of the *Astringent Clyster*.

Turpentine Clyster.—Take of common decoction, ten ounces; Venice turpentine, dissolved with the yolk of an egg, half an ounce; Florence oil, one ounce. Mix them.

This diuretic clyster is proper in obstructions of the urinary passages, and in colicky complaints, proceeding from gravel.

Vinegar Clyster.—This clyster is made by mixing three ounces of vinegar with five of water-gruel. It answers all the purposes of a common clyster, with the peculiar advantage of being proper either in inflammatory or putrid disorders, especially in the latter.

COLLYRIA, OR EYE-WATERS.

EYE-WATERS have been multiplied without number, almost every person pretending to be possessed of some secret preparation for the cure of sore eyes. I have examined many of them, and find that they are pretty much alike, the basis of most of them being either alum, vitriol, or lead. Their effects evidently are to brace and restore the tone of the parts: hence they are principally of service in slight inflammations; and in that relaxed state of the parts which is induced by obstinate ones.

Camphor is commonly added to these compositions; but as it seldom incorporates properly with the water, it can be of little use. Boles and other earthy substances, as they do not dissolve in water, are likewise unfit for this purpose.

Collyrium of Alum.—Take of alum half a drachm; agitate it well together with the white of an egg.

This is the Collyrium of Riverius. It is used in inflammation of the eyes, to allay heat, and restrain the flux of humors. It must be spread upon linen, and applied to the eyes; but should not be kept on above three or four hours at a time.

Vitriolic Collyrium.—Take of white vitriol, half a drachm; rose-water, six ounces. Dissolve the vitriol in the water, and filter the liquor.

This, though simple, is perhaps equal in virtue to most of the celebrated collyria. It is an useful application in weak, watery, and inflamed eyes. Though the slighter inflammations will generally yield to it, yet in those of a more obstinate nature the assistance of bleeding and blistering will often be necessary.

When a strong astringent is judged proper, a double or triple quantity of the vitriol may be used. I have seen a solution of four times the strength of the above used with manifest advantage.

Collyrium of Lead.—The sugar of lead, and crude sal ammoniac, of each four grains. Dissolve them in eight ounces of common water: to which forty or fifty drops of laudanum may be occasionally added.

Those who choose, may substitute, instead of this, the collyrium of lead, recommended by Goulard; which is made by putting twenty-five drops of his *extract of lead* to eight ounces of water, and adding a tea-spoonful of brandy. Indeed, common water and brandy, without any other addition, will in many cases answer very well as a collyrium. An ounce of the latter may be added to five or six ounces of the former; and the eyes, if weak, bathed with it night and morning. For a rheum in the eyes, great benefit has been found by washing them frequently with rose-water. Many experience the like good effect from anointing the eye-lids with Smellom's salve.

CONSERVES AND PRESERVES.

THESE preparations possess very few medical properties, and may rather be classed among sweetmeats than medicines. They are sometimes, however, of use, for reducing into boluses or pills some of the more ponderous powders, as the preparations of iron, mercury, and tin.

Conserves are compositions of fresh vegetables and sugar, beaten together into an uniform mass. In making these preparations, the leaves of vegetables must be freed from their stalks, the flowers from their cups, and the yellow part of orange-peel taken off with a rasp. They are then to be pounded in a marble or wedgewood mortar, with a wooden pestle, into a smooth mass; after which, thrice their weight of fine sugar is commonly added by degrees, and the beating continued till they are uniformly mixed; but the conserve will be better if only twice its weight of sugar be added.

Conserve of Red Roses.—Take a pound of red rose-buds, cleared of their heels; beat them well in a mortar, and adding by degrees two pounds of double-refined sugar, in powder, make a conserve. After the same manner are prepared the conserves of orange-peel, rosemary-flowers, sea-wormwood, the leaves of wood-sorrel, &c.

Candied Orange-peel.—Soak Seville orange-peel in several waters, till it loses its bitterness; then boil it in a solution of double refined sugar in water, till it becomes tender and transparent.

Candied lemon-peel is prepared in the same manner.

DECOCTIONS.

WATER readily extracts the gummy and saline parts of vegetables; and though its action is chiefly confined to these, yet the resinous and oily being intimately blended with the gummy and saline, are in great part taken up along with them. Hence watery decoctions and infusions of vegetables constitute a large, and not unuseful, class of medicines. Although most vegetables yield their virtues to water, as well by infusion as decoction, yet the latter is often necessary, as it saves time, and does in a few minutes what the other would require hours, and sometimes days, to effect.

The medicines of this class are all intended for immediate use.

Decoction of Mallows.—Take of the roots of marsh-mallows, moderately dried, three ounces; raisins of the sun, one ounce; water, three pints.

Boil the ingredients in the water till one-third of it is consumed; afterwards strain the decoction, and let it stand for some time to settle. If the roots be thoroughly dried, they must be boiled till one-half of the water be consumed.

In coughs, and sharp defluxions upon the lungs, this decoction may be used for ordinary drink.

The Common Decoction.—Take of camomile-flowers, one ounce; elder-flowers, and sweet fennel-seeds, of each half an ounce; water, two quarts. Boil them for a little while, and then strain the decoction, or infuse the ingredients for some hours in boiling water.

This decoction is chiefly intended as the basis of clysters, to which other ingredients may

be occasionally added. It will likewise serve as a common fomentation, spirit of wine or other things being added, in such quantity as the case may require.

Decoction of the Bark.—Boil an ounce of the Peruvian bark, grossly powdered, in a pint and a half of water to one pint; then strain the decoction. If a tea-spoonful of the weak spirit of vitriol be added to this medicine, it will render it both more agreeable and efficacious.

Compound Decoction of the Bark.—Take of Peruvian bark and Virginia snake-root, grossly powdered, each three drachms. Boil them in a pint of water to one-half. To the strained liquor add an ounce and a half of any aromatic water.

Sir John Pringle recommends this as a proper medicine towards the decline of malignant fevers, when the pulse is low, the voice weak, and the head affected with a stupor, but with little delirium. The dose is four table-spoonfuls every fourth or sixth hour.

Decoction of Sarsaparilla.—Take of fresh sarsaparilla-root, sliced and bruised, two ounces; shavings of guaiacum-wood, one ounce. Boil over a slow fire, in three quarts of water, to one; adding towards the end, half an ounce of sassafras-wood, and three drachms of liquorice. Strain the decoction.

This may either be employed as an assistant to a course of mercurial alteratives, or taken after the mercury has been used for some time. It strengthens the stomach, and restores flesh and vigor to habits emaciated by the venereal disease. It may also be taken in the rheumatism, and cutaneous disorders, proceeding from foulness of the blood and juices. For all these intentions it is greatly preferable to the *Decoction of Wood*. Dose: from a pint and a half to two quarts in the day.

The following decoction is said to be similar to that used by KENNEDY, in the cure of the venereal disease, and may supply the place of Lisbon diet drink:—

Take of sarsaparilla, three ounces; liquorice and mezereon root, of each half an ounce; shavings of guaiacum and sassafras-wood, of each one ounce; crude antimony, powdered, an ounce and a half. Infuse these ingredients in eight pints of boiling water for twenty-four hours, then boil them till one half the water is consumed; afterwards strain the decoction. To be used in the same manner as the preceding.

Decoction of Seneka.—Take of Seneka or rattle-snake root, one ounce; water, a pint and a half. Boil to one pint, and strain.

This is recommended in the pleurisy, dropsy, rheumatism, and some obstinate disorders of the skin. The dose is two ounces, three or four times a-day or oftener, if the stomach will bear it.

DRAUGHTS.

THIS is a proper form for exhibiting such medicines as are intended to operate immediately, and which do not need to be frequently repeated, as purges, vomits, and a few others, which are to be taken at one dose. Where a medicine requires to be used for any length of time, it is better to make up a large quantity of it at once, which saves both trouble and expense.

Anodyne Draught.—Take of liquid laudanum, twenty-five drops; simple cinnamon-water, an ounce; common syrup, two drachms. Mix them.

In excessive pain, where bleeding is not necessary, and in great restlessness, this composing draught may be taken and repeated occasionally.

Diuretic Draught.—Take of the diuretic salt, two scruples; syrup of poppies, two drachms; simple cinnamon-water, and common water, of each an ounce. In an obstruction or deficiency of urine.

Sweating Draught.—Take spirit of Mindererus, (*acetated solution of ammonia*) two ounces; salt of hartshorn, five grains; simple cinnamon-water, and syrup of poppies, of each half an ounce. Make them into a draught.

In recent colds and rheumatic complaints, this draught is of service. To promote its effects, however, the patient ought to drink freely of warm water-gruel, or of some other weak diluting liquor.

Vomiting Draughts.—Take of ipecacuanha, in powder, a scruple; water, an ounce; simple syrup, a drachm. Mix them. Persons who require a stronger vomit may add to this half a grain, or a grain, of emetic tartar.

Those who do not choose the powder, may take ten drachms of the ipecacuanha wine; or half an ounce of the wine, and an equal quantity of the syrup of squills.

ELECTUARIES.

ELECTUARIES are generally composed of the lighter powders, mixed with syrup, honey, conserve, or mucilage, into such a consistence, that the powders may neither separate by keeping, nor the mass prove too stiff for swallowing. They receive chiefly the milder alterative medicines, and such as are not ungrateful to the palate.

Astringent electuaries, and such as have pulps of fruit in them, should be prepared only in small quantities; as astringent medicines lose their virtues by being kept in this form, and the pulps of fruits are apt to ferment.

For the extraction of pulps it will be necessary to boil unripe fruits, and ripe ones, if they are dried, in a small quantity of water, till they become soft. The pulp is then to be pressed out through a strong hair sieve, or thin cloth, and afterwards boiled to a due consistence, in an earthen vessel, over a gentle fire, taking care to prevent the matter from burning by continually stirring it. The pulps of fruit that are both ripe and fresh may be pressed out without any previous boiling.

Lenitive Electuary.—Take of senna, in fine powder, eight ounces; coriander-seed, also in powder, four ounces; pulp of tamarinds and of French prunes, each a pound. Mix the pulps and powders together, and with a sufficient quantity of simple syrup, reduce the whole into an electuary.

A tea-spoonful of this electuary, taken two or three times a-day, generally proves an agreeable laxative. It likewise serves as a convenient vehicle for exhibiting more active medicines, as jalap, scammony, and such like.

Electuary for the Piles.—Take flowers of sulphur, one ounce; cream of tartar, half an ounce; treacle, a sufficient quantity to form an electuary.

A tea-spoonful of this may be taken three or four times a-day.

Electuary for the Rheumatism.—Take of conserve of roses, two ounces; cinnabar of antimony, levigated, an ounce and a half; gum guaiacum, in powder, an ounce; syrup of ginger, a sufficient quantity to make an electuary.

EMULSIONS.

EMULSIONS, besides their use as medicines, are also proper vehicles for certain substances, which could not otherwise be conveniently taken in a liquid form. Thus camphor, triturated with almonds, readily unites with water into an emulsion. Pure oils, balsams, resins, and other similar substances, are likewise rendered miscible with water by the intervention of mucilages.

Common Emulsion.—Take of sweet almonds, an ounce; bitter almonds, a drachm; water, two pints.

Let the almonds be blanched, and beat up in a mortar; adding the water by little and little, so as to make an emulsion; afterwards let it be strained.

Arabic Emulsion.—This is made in the same manner as the above, adding to the almonds, while beating, two ounces and a half of the mucilage of gum arabic.

Where soft cooling liquors are necessary, these emulsions may be used as ordinary drink.

Camphorated Emulsion.—Take of camphor, half a drachm; sweet almonds, half a dozen; white sugar, half an ounce; mint water, eight ounces. Grind the camphor and almonds well together in a stone mortar, and add by degrees the mint water; then strain the liquor, and dissolve in it the sugar.

In fevers, and other disorders which require the use of camphor, a table-spoonful of this emulsion may be taken every two or three hours.

Emulsion of Gum Ammoniac.—Take of gum ammoniac, two drachms; water, eight ounces. Grind the gum with the water poured upon it by little and little, till it is dissolved.

This emulsion is used for attenuating tough, viscid phlegm, and promoting expectoration. In obstinate coughs, two ounces of the syrup of poppies may be added to it. The dose is two table-spoonfuls three or four times a-day.

EXTRACTS.

EXTRACTS are prepared by boiling the subject in water, and evaporating the strained decoction to a due consistence. By this process some of the more active parts of plants are

freed from the useless, indissoluble earthy matter, which makes the larger share of their bulk. Water, however, is not the only menstruum used in the preparation of extracts; sometimes it is joined with spirits, and at other times rectified spirit alone is employed for that purpose.

Extracts are prepared from a variety of different drugs, as the bark, gentian, jalap, &c.; but, as they require a troublesome and tedious operation, it will be more convenient for a private practitioner to purchase what he needs of them from a professed druggist, than to prepare them himself. Such of them as are generally used are inserted in our list of such drugs and medicines as are to be kept for private practice.

FOMENTATIONS.

FOMENTATIONS are generally intended either to ease pain, by taking off tension and spasm; or to brace and restore the tone and vigor of those parts to which they are applied. The first of these intentions may generally be answered by warm water, and the second by cold. Certain substances, however, are usually added to water with a view to heighten its effects, as anodynes, aromatics, astringents, &c. We shall therefore subjoin a few of the most useful medicated fomentations, that people may have it in their power to make use of them as they choose.

Anodyne Fomentation.—Take of white poppy-heads, two ounces; elder flowers, half an ounce; water, three pints. Boil till one pint is evaporated, and strain out the liquor.

This fomentation is used for relieving acute pain.

Aromatic Fomentation.—Take of Jamaica pepper, half an ounce; red wine, a pint. Boil them a little, and then strain the liquor.

This is intended, not only as a topical application for external complaints, but also for relieving the internal parts. Pains of the bowels, which accompany dysenteries and diarrhæas, flatulent colics, uneasiness of the stomach, and retchings to vomit, are frequently abated by fomenting the abdomen and region of the stomach with the warm liquor.

Common Fomentation.—Take tops of wormwood and camomile flowers, dried, of each two ounces; water, two quarts. After a slight boiling, pour off the liquor.

Brandy or spirit of wine may be added, in such quantity as the particular circumstances of the case shall require; but these are not always necessary.

Emollient Fomentation.—The same as the common decoction.

GARGLES.

HOWEVER trifling this class of medicines may appear, they are by no means without their use. They seldom, indeed, cure diseases, but they often alleviate very disagreeable symptoms; as parchedness of the mouth, foulness of the tongue and fauces, &c.; they are peculiarly useful in fevers and sore throats. In the latter, a gargle will sometimes remove the disorder; and in the former, few things are more refreshing or agreeable to the patient, than to have his mouth frequently washed with some soft detergent gargle. One advantage of these medicines is, that they are easily prepared. A little barley-water and honey may be had any where; and if to these be added as much vinegar as will give them an agreeable sharpness, they will make a very useful gargle for softening and cleansing the mouth.

Attenuating Gargle.—Take of water, six ounces; honey, one ounce; nitre, a drachm and a half. Mix them.

This cooling gargle may be used either in the inflammatory quinsy, or in fevers, for cleansing the tongue and fauces.

Common Gargle.—Take of rose-water, six ounces; syrup, half an ounce; spirit of vitriol, a sufficient quantity to give it an agreeable sharpness. Mix them.

This gargle, besides cleansing the tongue and fauces, acts as a gentle repellent, and will sometimes remove a slight quinsy.

Detergent Gargle.—Take of the emollient gargle, a pint; tincture of myrrh, an ounce; honey, two ounces. Mix them.

When exulcerations require to be cleansed, or the secretion of tough, viscid saliva promoted, this gargle will be of service.

Emollient Gargle.—Take an ounce of marshmallow roots, and two or three figs; boil them in a quart of water till near one-half of it be consumed; then strain out the liquor.

If an ounce of honey, and half an ounce of spirit of sal ammoniac, be added to the above, it will then be an exceedingly good *attenuating gargle*.

This gargle is beneficial in fevers, where the tongue and fauces are rough and parched, to soften these parts, and to promote the discharge of saliva.

The learned and accurate Sir John Pringle observes, that in the inflammatory quinsy, or strangulation of the fauces, little benefit arises from the common gargles; that such as are of an acid nature do more harm than good, by contracting the emunctories of the saliva and mucus, and thickening those humors; that a decoction of figs in milk and water has a contrary effect, especially if some sal ammoniac be added; by which the saliva is made thinner, and the glands are brought to secrete more freely; a circumstance always conducive to the cure.

INFUSIONS.

VEGETABLES yield nearly the same properties to water by infusion as by decoction; and though they may require a longer time to give out their virtues in this way, yet it has several advantages over the other; since boiling is found to dissipate the finer parts of many bitter and aromatic substances, without more fully extracting their medicinal principles. Even from those vegetables which are weak in virtue, rich infusions may be obtained, by returning the liquor upon fresh quantities of the subject, the water loading itself more and more with the active parts; and these loaded infusions are applicable to valuable purposes in medicine, as they contain in a small compass the finer, more subtile, and active principles of vegetables, in a form readily miscible with the human body.

Bitter Infusion.—Take tops of the lesser centaury and camomile flowers, of each half an ounce; yellow rind of lemon and orange-peel, carefully freed from the inner white part, of each two drachms. Cut them in small pieces, and infuse them in a quart of boiling water.

For indigestion, weakness of the stomach, or want of appetite, a tea-cupful of this infusion may be taken twice or thrice a-day.

Infusion of the Bark.—To an ounce of the bark, in powder, add four or five table-spoonfuls of brandy, and a pint of boiling water. Let them infuse for two or three days.

This is one of the best preparations of the bark for weak stomachs. In disorders where the corroborating virtues of that medicine are required, a tea-cupful of it may be taken two or three times a-day.

Infusion of Carduus Benedictus (Blessed Thistle).—Infuse an ounce of the dried leaves of carduus benedictus, or blessed thistle, in a pint of common water, for six hours, without heat; then filter the liquor through paper.

This light infusion may be given, with great benefit, in weakness of the stomach, where the common bitters do not agree. It may be flavored at pleasure with cinnamon or other aromatic materials.

Infusion of Linseed.—Take of linseed, two spoonfuls; liquorice root, sliced, half an ounce; boiling water, three pints. Let them stand to infuse by the fire for some hours, and then strain off the liquor.

Infusion of Tamarinds and Senna. Take of tamarinds, one ounce; senna, and crystals of tartar, each two drachms. Let these ingredients be infused four or five hours in a pint of boiling water; afterwards let the liquor be strained, and an ounce or two of the aromatic tincture added to it. Persons who are easily purged may leave out either the tamarinds or the crystals of tartar.

This is an agreeable cooling purge, and supplies the place of the *Decoction of Tamarinds and Senna*. A tea-cupful may be given every half hour till it operates.

Spanish Infusion.—Take of Spanish juice, cut into small pieces, an ounce; salt of tartar, three drachms. Infuse in a quart of boiling water for a night. To the strained liquor add an ounce and a half of the syrup of poppies.

In recent colds, coughs, and obstructions of the breast, a tea-cupful of this infusion may be taken with advantage three or four times a-day.

Infusion for the Palsy.—Take of horse-radish root shaved, mustard-seed bruised, each four ounces; outer rind of orange-peel, one ounce. Infuse them in two quarts of boiling water, in a close vessel, for twenty-four hours.

In paralytic complaints, a tea-cupful of this warm stimulating medicine may be taken three or four times a-day. It excites the action of the solids, proves diuretic, and, if the patient be kept warm, promotes perspiration.

If two or three ounces of the dried leaves of marsh-trefoil be used instead of the mustard, it will make the *Antiscorbutic Infusion*.

JULEPS.

THE basis of juleps or draughts is generally common water, or some simple distilled water, with one-third or one-fourth its quantity of distilled spirituous water, and as much sugar or syrup as is sufficient to render the mixture agreeable. This is sharpened with vegetable or mineral acids, or impregnated with other medicines suitable to the intention.

Camphorated Julep.—Take of camphor, one drachm; rectified spirit of wine, ten drops; double-refined sugar, half an ounce; boiling distilled water, one pint. Rub the camphor first with the spirit of wine, then with the sugar; lastly, add the water by degrees, and strain the liquor.

In hysterical and other complaints, where camphor is proper, this julep may be taken in the dose of a spoonful or two as often as the stomach will bear it.

Cordial Julep.—Take of simple cinnamon-water, four ounces; Jamaica pepper-water, two ounces; volatile aromatic spirit, and compound spirit of lavender, of each two drachms; syrup of orange-peel, an ounce. Mix them. Dose, two spoonfuls three or four times a-day, in disorders accompanied with great weakness and depression of spirits.

Expectorating Julep.—Take of the emulsion of gum ammoniac, six ounces; syrup of squills, two ounces. Mix them.

In coughs, asthmas, and obstructions of the breast, two table-spoonfuls of this julep may be taken every three or four hours.

Musk Julep.—Rub half a drachm of musk well together with half an ounce of sugar, and add to it, gradually, of simple cinnamon and peppermint-water, each two ounces; of the volatile aromatic spirit, two drachms.

In the low state of nervous fevers, hiccoughing, convulsions, and other spasmodic affections, two table-spoonfuls of this julep may be taken every two or three hours.

Saline Julep.—Dissolve two drachms of salt of tartar in three ounces of fresh lemon juice, strained; when the effervescence is over, add of mint-water, and common water, each two ounces; of simple syrup, one ounce.

This removes sickness at the stomach, relieves vomiting, promotes perspiration, and may be of some service in fevers, especially of the inflammatory kind.

MIXTURES.

A MIXTURE differs from a julep in this respect, that it receives into its composition not only salts, extracts, and other substances dissoluble in water, but also earths, powders, and such substances as cannot be dissolved. A mixture is seldom either an elegant or agreeable medicine. It is nevertheless necessary. Many persons can take a mixture, who are not able to swallow a bolus or an electuary: besides, there are medicines which act better in this than in any other form.

Astringent Mixture.—Take simple cinnamon-water, and common water, of each three ounces; spirituous cinnamon-water, an ounce and a half; Japonic confection, half an ounce. Mix them.

In dysenteries which are not of long standing, after the necessary evacuations, a spoonful or two of this mixture may be taken every four hours, interposing every second or third day a dose of rhubarb.

The *Astringent Mixture*, which I have lately made use of with great success is prepared thus:

Take powder of bole with opium, two drachms; cinnamon-water and penny-royal water, of each three ounces; spirituous cinnamon-water, six drachms; simple syrup, one ounce. Mix them, and take a table-spoonful four or five times a-day.

Diuretic Mixture.—Take of mint-water, five ounces; vinegar of squills, six drachms; sweet spirit of nitre, half an ounce; syrup of ginger, an ounce and a half. Mix them.

In obstructions of the urinary passages, two spoonful of this mixture may be taken twice or thrice a-day.

Laxative Absorbent Mixture.—Rub one drachm of magnesia alba in a mortar with ten or twelve grains of the best Turkey rhubarb, and add to them three ounces of common water; simple cinnamon-water, and syrup of sugar, of each one ounce.

As most diseases of infants are accompanied with acidities, this mixture may either be given with a view to correct these, or to open the body. A table-spoonful may be taken for a dose, and repeated three times a-day. To a very young child half a spoonful will be sufficient.

When the mixture is intended to purge, the dose may either be increased, or the quantity of rhubarb doubled.

This is one of the most generally useful medicines for children with which I am acquainted.

Saline Mixture.—Dissolve a drachm of the salt of tartar in four ounces of boiling water; and when cold, drop into it spirit of vitriol till the effervescence ceases; then add, of peppermint-water, two ounces; simple syrup, one ounce.

Where fresh lemons cannot be had, this mixture may occasionally supply the place of the saline julep.

Squill Mixture.—Take of simple cinnamon-water, five ounces; vinegar of squills, one ounce; syrup of marshmallows, an ounce and a half. Mix them.

This mixture, by promoting expectoration, and the secretion of urine, proves serviceable in asthmatic and dropsical habits. A table-spoonful of it may be taken frequently.

OINTMENTS, LINIMENTS, AND CERATES.

NOTWITHSTANDING the extravagant encomiums which have been bestowed on different preparations of this kind, with regard to their efficacy in the cure of wounds, sores, &c. it is beyond a doubt, that the most proper application to a green wound is dry lint. But though ointments do not heal wounds and sores, yet they serve to defend them from the external air, and to retain such substances as may be necessary for drying, deterging, destroying proud flesh, and such like. For these purposes, however, it will be sufficient to insert only a few of the most simple forms, as ingredients of a more active nature can occasionally be added to them.

Yellow Basilicum Ointment.—Take of yellow wax, white resin, and frankincense, each a quarter of a pound; melt them together over a gentle fire; and add of hog's lard prepared, one pound. Strain the ointment while warm.

Employed for cleansing and healing wounds and ulcers.

Ointment of Calamine. (*Turner's Cerate.*)—Take of olive oil, a pint and a half; white wax, and calamine stone levigated, of each half a pound. Let the calamine stone, reduced into a fine powder, be rubbed with some part of the oil, and afterwards added to the rest of the oil and wax previously melted together, continually stirring them till quite cold.

An exceedingly good application in burns, and excoriations from whatever cause.

Emollient Ointment.—Take of palm oil, two pounds; olive oil, a pint and a half; yellow wax, half a pound; Venice turpentine, a quarter of a pound. Melt the wax in the oils over a gentle fire; then mix in the turpentine, and strain the ointment.

Ointment for Piles.—Take of lard, one ounce; Aleppo galls, powdered, two drachms; camphor, half a drachm; laudanum, sixty drops; extract of Jamestown weed, half a drachm. Mix the ingredients well, in a mortar, and apply the ointment to the piles two or three times a day.

Creosote Ointment.—Take oil of Creosote, five drops; simple cerate, one ounce; gum camphor, half a drachm. Mix into an ointment. To be applied to tetters and ulcerated surfaces.

Iodine Ointment.—Take of iodine, twenty grains; simple cerate, one ounce. Mix into an ointment. To be applied to scrofulous and other glandular swellings.

Ointment of Hydriodate of Potash.—Take of hydriodate of potash, twenty grains; simple cerate, one ounce. Mix into an ointment. To be applied for similar purpose with the last article.

Ointment of Lead.—Take of olive oil, half a pint; white wax, two ounces; sugar of lead, three drachms. Let the sugar of lead, reduced into a fine powder, be rubbed up with some part of the oil, and afterwards added to the other ingredients, previously melted together, continually stirring them till quite cold.

This cooling and gently astringent ointment may be used in all cases where the intention is to dry and skin over the part, as in scalding, &c.

Mercurial Ointment.—Take of quicksilver, two ounces; hog's lard, three ounces; nut-ton suet, one ounce. Rub the quicksilver with an ounce of the hog's lard in a warm mortar, till the globules be perfectly extinguished; then rub it up with the rest of the lard and suet, previously melted together.

The principal intention of this ointment is to convey mercury into the body by being rubbed upon the skin.

Ointment of Sulphur.—Take of hog's lard prepared, four ounces; flowers of sulphur, an ounce and a half; crude sal-ammoniac, two drachms; essence of lemon, ten or twelve drops. Make them into an ointment.

This ointment, rubbed upon the parts affected, will generally cure the itch. It is both the safest and best application for that purpose, and, when made in this way, has no disagreeable smell.

Ointment for Diseases of the Skin.—Take of the ointment, commonly called *unguentum citrinum*, a drachm and a half; flour of brimstone and powder of hellebore, of each an ounce; hog's lard, three ounces; essence of lemon, or oil of thyme, from twenty to thirty drops, to correct the offensiveness of the smell. Make them into an ointment.

I have not only known many ordinary affections of the skin cured by this ointment, but even some of a very malignant nature, and approaching to leprosy.

White Ointment.—Take of olive-oil, one pint; white wax and spermaceti, of each three ounces. Melt them with a gentle heat, and keep them constantly and briskly stirring together, till quite cold.

If two drachms of camphor, previously rubbed with a small quantity of oil, be added to the above, it will make the *White camphorated Ointment*.

Liniment for Burns.—Take equal parts of Florence oil, or of fresh drawn linseed oil, and lime-water, shake them well together in a wide-mouthed bottle, so as to form a liniment.

This is found to be an exceedingly proper application for recent scalds or burns. It may either be spread upon a cloth, or the parts affected may be anointed with it twice or thrice a-day.

White Liniment.—This is made in the same manner as the white ointment, two-thirds of the wax being left out.

This liniment may be applied in cases of excoriation, where, on account of the largeness of the surface, the ointments with lead or calamine might be improper.

Liniment for the Piles.—Take of emollient ointment, two ounces; liquid laudanum, half an ounce. Mix these ingredients with the yolk of an egg, and work them well together.

Volatile Liniment.—Take of Florence oil, an ounce; spirit of hartshorn, half an ounce. Shake them together.

This liniment, made with equal parts of the spirit and oil, will be more efficacious, where the patient's skin is able to bear it.

Camphorated Oil.—Rub an ounce of camphor, with two ounces of Florence oil, in a mortar, till the camphor be entirely dissolved.

This antispasmodic liniment may be used in obstinate rheumatism, and in some other cases accompanied with extreme pain and tension of the parts.

PILLS.

MEDICINES which operate in a small dose, and whose disagreeable taste or smell makes it necessary that they should be concealed from the palate, are more commodiously exhibited in this form. No medicine, however, that is intended to operate quickly, ought to be made into pills, as they often lie for a considerable time on the stomach before they are dissolved, so as to produce any effect.

As the ingredients which enter the composition of pills are generally so contrived, that one pill of an ordinary size may contain about five grains of the compound, in mentioning the dose we shall only specify the number of pills to be taken: as one, two, three, &c.

Lee's Pills.—Take of Socotrine aloes, 30 grains; gamboge, 20 grains; calomel, 30 grains; rhubarb, 15 grains; white soap, 10 grains. Mix, and divide the mass into pills of the usual size.

Cooke's Pills.—Take of calomel, aloes, and rhubarb, each one drachm. Mix with a few drops of water, and divide the mass into thirty pills.

Anderson's Pills.—Take of aloes, thirty-six grains; scammony, twenty-four grains: oil of anise, two drops; sulphate of iron, three grains. Mix, and divide the mass into pills of a small size.

Alterative Pills.—Take precipitated sulphuret of antimony, five grains; blue pill, and extract of hyosciamus, each twenty grains. Make ten pills; of which one is to be given three times a day, in cases of painful or irritable stomach, &c.

Composing Pill.—Take of purified opium, ten grains; Castile soap, half a drachm. Beat them together, and form the whole into twenty pills.

When a quieting draught will not sit upon the stomach, one, two, or three of these pills may be taken, as occasion requires.

Deobstruent Pill.—Take salt of steel; socotrine aloes; myrrh in powder; of each a drachm. Make into forty pills, of which two are to be taken evening and morning.

I have found these pills of excellent service in obstructions of the *menses*.

Fætid Pill.—Take of asafoetida, half an ounce; simple syrup, as much as is necessary to form it into pills.

In hysteric complaints, four or five pills, of an ordinary size, may be taken twice or thrice a-day. They may likewise be of service to persons afflicted with the asthma.

When it is necessary to keep the body open, a proper quantity of rhubarb, aloes, or jalap, may occasionally be added to the above mass.

Hemlock Pill.—Take any quantity of the extract of hemlock, and adding to it about a fifth part its weight of the powder of the dried leaves; form it into pills of the ordinary size.

The extract of hemlock may be taken from one grain to several drachms in the day. The best method, however, of using these pills, is to begin with one or two, and to increase the dose gradually, as far as the patient can bear them, without any remarkable degree of stupor or giddiness.

Mercurial Pill.—Take of purified quicksilver and honey, each half an ounce. Rub them together in a mortar, till the globules of mercury are perfectly extinguished; then add, of Castile soap, two drachms; powdered liquorice, or crumb of bread, a sufficient quantity to give the mass a proper consistence for pills.

When stronger mercurial pills are wanted, the quantity of quicksilver may be doubled.

The dose of these pills is different, according to the intention with which they are given. As an alterant, two or three may be taken daily. To raise a salivation, four or five will be necessary.

Equal parts of the above pill and powdered rhubarb, made into a mass, with a sufficient quantity of simple syrup, will make a *Mercurial Purging Pill*.

Mercurial Sublimate Pill.—Dissolve fifteen grains of the corrosive sublimate of mercury in two drachms of the saturated solution of crude sal ammoniac, and make it into a paste, in a glass mortar, with a sufficient quantity of the crumb of bread. This must be formed into one hundred and twenty pills.

For the venereal disease, four of these pills may be taken twice a-day, as an alterant three, and for worms, two.

This pill, which is the most agreeable form of exhibiting the sublimate, has been found efficacious, not only in curing the venereal disease, but also in killing and expelling worms, after other powerful medicines had failed.*

Plummer's Pill.—Take of calomel, or sweet mercury, and precipitated sulphur of antimony, each three drachms; extract of liquorice, two drachms. Rub the sulphur and mercury well together: afterwards add the extract, and with a sufficient quantity of the mucilage of gum arabic, make them into pills.

This pill has been found a powerful, yet safe alternative in obstinate cutaneous disorders; and has completed a cure after salivation had failed. In venereal cases it has likewise produced excellent effects. Two or three pills of an ordinary size may be taken night and morning, the patient keeping moderately warm, and drinking after each dose a draught of decoction of the woods, or of sarsaparilla.

Purging Pill.—Take of socotrine aloes, and Castile soap, each two drachms; of simple syrup, a sufficient quantity to make them into pills.

Four or five of these pills will generally prove a sufficient purge. For keeping the body gently open, one may be taken night and morning. They are reckoned both deobstruent and stomachic, and will be found to answer all the purposes of Dr. Anderson's pills, the principal ingredient of which is aloes.

Where aloetic purges are improper, the following pills may be used:—

Take extract of jalap, and vitriolated tartar, of each two drachms; syrup of ginger, as much as will make them of a proper consistence for pills. To be taken in the same quantity as the above.

Purgative Pill.—Take powder of socotrine aloes, one drachm; of gum sagapene in powder, half a drachm; of gamboge, and gum arabic in powder, each, one scruple; essential oil of camomile, ten drops; syrup of buckthorn, a sufficient quantity; beat the whole into a mass, and divide into thirty-two pills.

This pill was contrived by that eminent physician, the late Dr. GEORGE FORDYCE. It is an excellent purgative, where the bowels are torpid, as in paralytic affections. One or two may be taken at bed-time.

Pill for the Bile.—Take gum pill and colocynth pill, each a drachm. Beat them together, and make the mass into thirty pills.

In bilious and nervous patients, where it was necessary to keep the body gently open, I have found these pills answer the purpose extremely well. I generally give one over-night, and another next morning, once or twice a-week. But the dose must be regulated by the effect.

Pill for the Jaundice.—Take of Castile soap, socotrine aloes, and rhubarb, of each one drachm. Make them into pills, with a sufficient quantity of syrup or mucilage.

These pills, as their title expresses, are chiefly intended for the jaundice, which, with the assistance of proper diet, they will often cure. Five or six of them may be taken twice a day, more or less, as is necessary to keep the body open. It will be proper, however, during their use, to interpose now and then a vomit of ipecacuanha or tartar emetic.

Stomachic Pill.—Take extract of gentian, two drachms; powdered rhubarb, and vitriolated tartar, of each one drachm; oil of mint, thirty drops; simple syrup, a sufficient quantity.

Three or four of these pills may be taken twice a-day, for invigorating the stomach, and keeping the body gently open.

Squill Pills.—Take powder of dried squills, a drachm and a half; gum ammoniac, and cardamom seeds, in powder, of each three drachms; simple syrup, a sufficient quantity.

In dropsical and asthmatic complaints, two or three of these pills may be taken twice a-day, or oftener, if the stomach will bear them.

Strengthening Pills.—Take soft extract of the bark, and salt of steel, each a drachm. Make into pills.

In disorders arising from excessive debility, or relaxation of the solids, as the *chlorosis*, or green sickness, two of these pills may be taken three times a-day.

* See a paper on this subject in the Edinburgh Physical and Literary Essays, by the ingenious Dr. John Gardener.

PLASTERS.

PLASTERS ought to be of a different consistence, according to the purposes for which they are intended. Such as are to be applied to the breasts or stomach, ought to be soft and yielding; while those designed for the limbs should be firm and adhesive.—It has been supposed, that plasters might be impregnated with the virtues of different vegetables, by boiling the recent vegetable with the oil employed for the composition of the plaster; but this treatment does not communicate to the oils any valuable qualities.—The *calces* of lead boiled with oils unite with them into a plaster of a proper consistence, which makes the basis of several other plasters. In boiling these compositions, a quantity of hot water must be added from time to time to prevent the plaster from burning or growing black. This, however, should be done with care, lest it cause the matter to explode.

Common Plaster.—Take of common olive oil, six pints; litharge, reduced to a fine powder, two pounds and a half. Boil the litharge and oil together over a gentle fire, continually stirring them, and keeping always about a half a gallon of water in the vessel; after they have boiled about three hours, a little of the plaster may be taken out and put into cold water, to try if it be of a proper consistence; when that is the case, the whole may be suffered to cool, and the water well pressed out of it with the hands.

This plaster is generally applied in slight wounds and excoriations of the skin. It keeps the part soft and warm, and defends it from the air, which is all that is necessary in such cases. Its principal use, however, is to serve as a basis for other plasters.

Adhesive Plaster.—Take of common plaster, half a pound; of Burgundy pitch a quarter of a pound. Melt them together.

This plaster is principally used for keeping on other dressings.

Anodyne Plaster.—Melt an ounce of adhesive plaster, and when it is cooling, mix with it a drachm of powdered opium, and the same quantity of camphor, previously rubbed up with a little oil.

This plaster generally gives ease in acute pains, especially of the nervous kind.

Blistering Plaster.—Take of Venice turpentine, six ounces; yellow wax, two ounces, Spanish flies in fine powder, three ounces; powdered mustard, one ounce. Melt the wax, and while it is warm, add to it the turpentine, taking care not to evaporate it by too much heat. After the turpentine and wax are sufficiently incorporated, sprinkle in the powder, continually stirring the mass till it be cold.

Though this plaster is made in a variety of ways, one seldom meets with it of a proper consistence. When compounded with oils and other greasy substances, its effects are blunted, and it is apt to run; while pitch and resin render it too hard, and very inconvenient.

When the blistering-plaster is not at hand, its place may be supplied by mixing with any soft ointment a sufficient quantity of powdered flies; or by forming them into a paste with flour and vinegar.

Blistering-plasters prove highly disagreeable to many people, by occasioning strangury. I have, therefore, of late used a plaster, in which a small quantity of blistering-salve has been mixed with the Burgundy pitch-plaster. I lay it over the part affected, and suffer it to remain as long as it will stick. The blistering-plaster loses its effect in a few hours, whereas this will act for many days, or even weeks, and seldom fails to remove pain, or slight obstructions.

Gum Plaster.—Take of the common plaster, four pounds; gum ammoniac and galbanum, strained, of each half a pound. Melt them together, and add, of Venice turpentine, six ounces.

This plaster is used as a digestive, and likewise for discussing indolent tumors.

Mercurial Plaster.—Take of common plaster, one pound; of gum ammoniac, strained, half a pound. Melt them together, and, when cooling, add eight ounces of quicksilver, previously extinguished by triture, with three ounces of hog's lard.

This plaster is recommended in pains of the limbs arising from a venereal cause. Indurations of the glands, and other indolent tumors, are likewise found sometimes to yield to it.

Stomach Plaster.—Take of gum plaster, half a pound; camphorated oil, an ounce and a half; black pepper, or capsicum, where it can be had, one ounce. Melt the plaster, and mix with it the oil; then sprinkle in the pepper, previously reduced to a fine powder.

An ounce or two of this plaster, spread upon soft leather, and applied to the region of the

stomach, will be of service in flatulencies arising from hysteric and hypochondriac affections. A little of the expressed oil of mace, or a few drops of the essential oil of mint, may be rubbed upon it before it is applied.

Warm Plaster.—Take of gum plaster, one ounce; blistering-plaster, two drachms. Melt them together over a gentle fire.

This plaster is useful in the sciatica and other fixed pains of the rheumatic kind: it ought, however, to be worn for some time, and to be renewed at least once a-week. If this is found to blister the part, which is sometimes the case, it must be made with a smaller proportion of the blistering-plaster.

Wax Plaster.—Take of yellow wax, one pound; white resin, half a pound; mutton-suet, three quarters of a pound. Melt them together.

This is generally used instead of the *Mellot Plaster*. It is a proper application after blisters, and in other cases where a gentle digestive is necessary.

POULTICES.

POULTICES are often beneficial, even in the most simple form; but more so, when employed to retain more active medicines,—to keep them in contact with the skin,—and to fit it for their absorption. Every nurse knows how to make a poultice.

A poor woman who had received a very dangerous wound in the tendons of her thumb from a rusty nail, called upon me some little time since. As her case properly belonged to the department of surgery, I advised her to apply to the hospital; but the official hirelings there refused to take her in, though I always understood that they were *obliged to take in accidents*. It seems, however, that some very confined meaning was annexed to this word by the surgeon on duty, and that he did not think the danger of a locked jaw to be an *accident* as deserving of his pity and immediate assistance, as a broken arm, or dislocated ankle. The poor woman came back to me; and, as her situation every moment became more and more alarming, the pain and inflammation having reached as high as the arm-pit, I advised her to apply to the whole hand and arm a large poultice, with an ounce of laudanum sprinkled over it, and to renew the poultice twice a-day. This she did with so much success, that the thumb is now quite well, though the accident did not happen above three weeks ago.

Alarming as the case was, I had some reason to rely on the efficacy of the poultice, from a former trial somewhat similar. One of those girls, who are employed by bookbinders in stitching the sheets, having wounded her finger with the three-edged needle used on such occasions, soon felt the pain shoot upwards with deadly tendency. I ordered her to apply the same sort of poultice with laudanum, which had the same happy effect.

Both these patients made use of the *Common Poultice*; but I prefer one made of linseed flour, which is more easily prepared, and keeps moist longer than any other.

POWDERS.

THIS is one of the most simple forms in which medicine can be administered. Many medical substances, however, cannot be reduced into powder, and others are too disagreeable to be taken in this form. The lighter powders may be mixed in any agreeable thin liquor, as tea or water-gruel. The more ponderous will require a more consistent vehicle, as syrup, conserve, jelly, or honey. Gums, and other substances, which are difficult to powder, should be pounded along with the drier ones; but those which are too dry, especially aromatics, ought to be sprinkled during their pulverization with a few drops of any proper water. Aromatic powders are to be prepared only in small quantities at a time, and kept in glass vessels closely stopped. Indeed, no powders ought to be exposed to the air, or kept too long, otherwise their virtues will be in a great measure destroyed.

Astringent Powder.—Take of alum and Japan earth, each two drachms. Pound them together, and divide the whole into ten or twelve doses.

In an immoderate flow of the *meneses*, and other hæmorrhages, one of these powders may be taken every hour, or every half hour, if the discharge be violent.

Powder of Bole.—Take of Bole armenic, or French Bole, two ounces; cinnamon, one ounce; tormentil root and gum arabic of each six drachms; long pepper, one drachm. Let all these ingredients be reduced into a powder,

This warm, glutinous, astringent powder is given in fluxes, and other disorders where medicines of that class are necessary, in the dose of a scruple or half a drachm.

If a drachm of opium be added, it will make the *Powder of Bole with Opium*, which is a medicine of considerable efficacy. It may be taken in the same quantity as the former, but not above twice or thrice a-day.

Carminative Powder.—Take of coriander-seed, half an ounce; ginger, one drachm; nutmegs, half a drachm; fine sugar, a drachm and a half. Reduce them into powder for twelve doses.

This powder is employed for expelling flatulences arising from indigestion, particularly those to which hysteric and hypochondriac persons are so liable. It may likewise be given in small quantities to children in their food, when troubled with gripes.

Diuretic Powder.—Take of gum arabic four ounces; purified nitre, one ounce. Pound them together, and divide the whole into twenty-four doses.

During the first stage of the venereal disease, one of these cooling powders may be taken three times a-day, with considerable advantage.

Aromatic Opening Powder.—Take the best Turkey rhubarb, cinnamon, and fine sugar, each two drachms. Let the ingredients be pounded, and afterwards mixed well together.

When flatulency is accompanied with costiveness, a tea-spoonful of this powder may be taken once or twice a-day, according to circumstances.

Saline Laxative Powder. Take of soluble tartar, and cream of tartar, each one drachm; purified nitre, half a drachm. Make them into a powder.

In fevers and other inflammatory disorders, where it is necessary to keep the body gently open, one of these cooling laxative powders may be taken in a little gruel, and repeated occasionally.

Steel Powder.—Take filings of steel, and loaf sugar, of each two ounces; ginger, two drachms. Pound them together.

In obstructions of the *menses*, and other cases where steel is proper, a tea-spoonful of this powder may be taken twice a-day, and washed down with a little wine and water.

Sudorific Powder.—Take purified nitre and vitriolated tartar, of each half an ounce, opium and ipecacuanha, of each one drachm. Mix the ingredients, and reduce them to a fine powder.

This is generally known by the name of *Dover's Powder*. It is a powerful sudorific. In obstinate rheumatisms, and other cases where it is necessary to excite a copious sweat, this powder may be administered in the dose of a scruple or half a drachm. Some patients will require two scruples. It ought to be accompanied with the plentiful use of some warm diluting liquor.

Worm Powder.—Take of tin, reduced into a fine powder, an ounce; Æthiop's mineral, two drachms. Mix them well together, and divide the whole into six doses.

One of these powders may be taken in a little syrup, honey, or treacle, twice a-day. After they have been all used, the following anthelmintic purge may be proper.

Purging Worm Powder.—Take the powdered rhubarb, a scruple; scammony and calomel of each five grains. Rub them together in a mortar for one dose. For children, however, these doses must be lessened according to their age.

If the powder of tin be given alone, its dose may be considerably increased. The late Dr. Alston gave it to the amount of two ounces in three days, and says, when thus administered, that it proves an egregious anthelmintic. He purged his patients both before they took the powder and afterwards.

Powder for the Tape Worm.—Early in the morning the patient is to take in any liquid two or three drachms, according to his age and constitution, of the root of the male fern reduced into a fine powder. About two hours afterwards, he is to take of calomel and resin of scammony, each ten grains; gum gamboge, six grains. These ingredients must be finely powdered, and given in a little syrup, honey, treacle, or any thing that is most agreeable to the patient. He is then to walk gently about, now and then drinking a dish of weak green tea, till the worm is passed. If the powder of the fern produces nausea or sickness, it may be removed by sucking the juice of an orange or lemon.

This medicine, which had been long kept a secret abroad for the cure of the tape-worm, was some time ago purchased by the French king, and made public for the benefit of mankind. Not having had an opportunity of trying it, I can say nothing from experience con-

cerning its efficacy. It seems, however, from its ingredients, to be an active medicine, and ought to be taken with care. The dose here prescribed is sufficient for the strongest patient; it must, therefore, be reduced according to the age and constitution.

SYRUPS.

SYRUPS were some time ago looked upon as medicines of considerable value. They are at present, however, regarded chiefly as vehicles for medicines of greater efficacy, and are used for sweetening draughts, juleps, or mixtures; and for reducing the lighter powders into boluses, pills, and electuaries. As all these purposes may be answered by the simple syrup alone, there is little occasion for any other; especially as they are seldom found but in a state of fermentation; and as the dose of any medicine given in this form is very uncertain. Persons who serve the public must keep whatever their customers call for; but, to the private practitioner, nine-tenths of the syrups usually kept in the shops are unnecessary.

Simple Syrup—Is made by dissolving in water, either with or without heat, about double its weight of fine sugar.

If twenty-five drops of laudanum be added to an ounce of the simple syrup, it will supply the place of diacodium, or the syrup of poppies, and will be found a more safe and certain medicine.

The lubricating virtues of the syrup of marshmallows may likewise be supplied, by adding to the common syrup a sufficient quantity of mucilage of gum arabic.

Those who choose to preserve the juice of lemons in form of syrup, may dissolve in it, by the heat of a warm bath, nearly double its weight of fine sugar. The juice ought to be previously strained, and suffered to stand till it settles.

The syrup of ginger is sometimes of use as a warm vehicle for giving medicine to persons afflicted with flatulency. It may be made by infusing two ounces of bruised ginger in two pints of boiling water for twenty-four hours. After the liquor has been strained, and has stood to settle for some time, it may be poured off, and a little more than double its weight of fine powdered sugar dissolved in it.

TINCTURES, ELIXIRS, &c.

RECTIFIED spirit is the direct menstruum of the resins and essential oils of vegetables, and totally extracts these active principles from sundry substances, which yield them to water, either not at all or only in part.

It dissolves likewise those parts of animal substances in which their peculiar smells and tastes reside. Hence, the tinctures prepared with rectified spirits form a useful and elegant class of medicines, possessing many of the most essential virtues of simples, without being clogged with their inert and useless parts.

Water, however, being the proper menstruum of the gummy, saline, and saccharine parts of medicinal substances, it will be necessary, in the preparation of several tinctures, to make use of a weak spirit, or a composition of rectified spirit and water.

Aromatic Tincture.—Infuse two ounces of Jamaica pepper in two pints of brandy, without heat, for a few days: then strain off the tincture.

This simple tincture will sufficiently answer all the intentions of the more costly preparations of this kind. It is rather too hot to be taken by itself; but is very proper for mixing with such medicines as might otherwise prove too cold for the stomach.

Compound Tincture of the Bark.—Take of Peruvian bark, two ounces; Seville orange-peel and cinnamon, of each half an ounce. Let the bark be powdered and the other ingredients bruised: then infuse the whole in a pint and a half of brandy, for five or six days, in a close vessel; afterwards strain off the tincture.

The dose is from one drachm to three or four, every fifth or sixth hour. It may be given in any suitable liquor, and occasionally sharpened with a few drops of the spirits of vitriol.

This tincture is not only beneficial in intermitting fevers, but also in the slow, nervous, and putrid kinds, especially towards their decline.

Volatile Fœtid Tincture.—Infuse two ounces of asafœtida in one pint of volatile aromatic spirit, for eight days, in a close bottle, frequently shaking it; then strain the tincture.

This medicine is beneficial in hysteric disorders, especially when attended with lowness of spirits, and faintings. A tea-spoonful of it may be taken in a glass of wine, or a cup of penny-royal tea.

Volatile Tincture of Gum Guaiacum.—Take of gum guaiacum, four ounces; volatile aromatic spirit, a pint. Infuse without heat, in a vessel well stopped, for a few days; then strain off the tincture.*

In rheumatic complaints, a tea-spoonful of this tincture may be taken in a cup of the infusion of water trefoil twice or thrice a-day.

Tincture of Black Hellebore.—Infuse two ounces of the roots of black hellebore, bruised, in a pint of proof spirit, for seven or eight days; then filter the tincture through paper. A scruple of cochineal may be infused along with the roots, to give the tincture a color.

In obstructions of the *menses*, a tea-spoonful of this tincture may be taken in a cup of camomile or penny-royal tea twice a-day.

Astringent Tincture.—Digest two ounces of gum kino, in a pint and a half of brandy, for eight days; afterwards strain it for use.

This tincture, though not generally known, is a good astringent medicine. With this view, an ounce, or more, of it may be taken three or four times a-day.

Tincture of Myrrh and Aloes.—Take of gum myrrh, an ounce and a half; hepatic aloes, one ounce. Let them be reduced to a powder, and infused in two pints of rectified spirits, for six days, in a gentle heat; then strain the tincture.

This is principally used by surgeons, for cleansing foul ulcers, and restraining the progress of gangrenes. It is also, by some, recommended as a proper application to green wounds.

Tincture of Iodine.—Take of iodine, two scruples; rectified spirits of wine, one ounce; compound spirits of lavender, two drachms. Mix. Dose, from ten to twenty drops thrice a-day, in a little sweetened water.

Tincture of Opium (Liquid Laudanum).—Take of crude opium, two ounces; spirituous aromatic water, and mountain wine, of each ten ounces. Dissolve the opium, sliced, in the wine, with a gentle heat, frequently stirring it; afterwards add the spirit, and strain off the tincture.

As twenty-five drops of this tincture contain about a grain of opium, the common dose may be from twenty to thirty drops.

Sacred Tincture, or Tincture of Hiera Picra.—Take of socotrine aloes in powder, one ounce; Virginian snake-root and ginger, of each two drachms. Infuse in a pint of mountain wine, and half a pint of brandy, for a week, frequently shaking the bottle; then strain off the tincture.

This is a safe and useful purge for persons of a languid and phlegmatic habit: but it is thought to have better effects, taken in small doses as a laxative.

The dose, as a purge, is from one to two ounces.

Compound Tincture of Senna.—Take of senna, one ounce; jalap, coriander-seeds, and cream of tartar, of each half an ounce. Infuse them in a pint and a half of French brandy for a week; then strain the tincture, and add to it four ounces of fine sugar.

This is an agreeable purge, and answers all the purposes of the *Elixir Salutis*, and of *Daffy's Elixir*. The dose is from one to two or three ounces.

Tincture of Spanish Flies.—Take of Spanish flies, reduced to a fine powder, two ounces; spirit of wine, one pint. Infuse for two or three days; then strain off the tincture.

This is intended as an acrid stimulant for external use. Parts affected with the palsy, or chronic rheumatism, may be frequently rubbed with it.

Tincture of the Balsam of Tolu.—Take of the Balsam of Tolu, an ounce and a half; rectified spirit of wine, a pint. Infuse in a gentle heat until the balsam is dissolved; then strain the tincture.

This tincture possesses all the virtues of the balsam. In coughs, and other complaints of the breast, a tea-spoonful or two of it may be taken on a bit of loaf-sugar. But the best way of using it is in syrup. An ounce of the tincture properly mixed with two pounds of simple syrup, will make what is commonly called the *Balsamic Syrup*.

Tincture of Rhubarb.—Take of rhubarb, two ounces and a half; lesser cardamom-seeds half an ounce; brandy, two pints. Digest for a week, and strain the tincture.

Those who choose to have a vinous tincture of rhubarb may infuse the above ingredients in a bottle of Lisbon wine, adding to it about two ounces of proof spirits.

* Very good tincture of guaiacum, for domestic use, may be made by infusing two or three ounces of the gum in a bottle of rum or brandy.

If half an ounce of gentian root, and a drachm of Virginian snake-root, be added to the above ingredients, it will make the bitter tincture of rhubarb.

All these tinctures are designed as stomachics and corroborants as well as purgatives. In weakness of the stomach, indigestion, laxity of the intestines, fluxes, colicky and such like complaints, they are frequently of great service. The dose is from half a spoonful to three or four spoonsful or more, according to the circumstances of the patient, and the purposes it is intended to answer.

The Tonic Tincture.—Mix two ounces of the compound tincture of Peruvian bark with the like quantity of the volatile tincture of Valerian; and of this mixture a tea-spoonful in a glass of wine or water is to be taken three or four times a-day.

I have long made use of this tincture for the relief of those peculiar affections of the stomach and bowels, such as indigestion, &c. which generally accompany nervous diseases. I do not say that the tincture will cure those complaints, nor do I know of any medicine that will; but where a complete cure cannot be rationally expected, relief is certainly a very desirable object.

Paregoric Elixir.—Take of flowers of benzoin, half an ounce; opium, two drachms. Infuse in one pound of the volatile aromatic spirit, for four or five days, frequently shaking the bottle; afterwards strain the elixir.

This is an agreeable and safe way of administering opium. It eases pain, allays tickling coughs, relieves difficult breathing, and is useful in many disorders of children, particularly the whooping-cough. The dose to an adult is from fifty to an hundred drops.

Sacred Elixir.—Take of rhubarb, cut small, ten drachms; socotrine aloes, in powder, six drachms; lesser cardamom-seeds, half an ounce; French brandy, two pints. Infuse for two or three days, and then strain the elixir.

This useful stomachic purge may be taken from one ounce to an ounce and a half.

Stomachic Elixir.—Take of gentian root, two ounces; Curassoa oranges, one ounce, Virginian snake-root, half an ounce. Let the ingredients be bruised, and infused for three or four days in two pints of French brandy; afterwards strain out the elixir.

This is an excellent stomach bitter. In flatulencies, indigestion, want of appetite, and such like complaints, a small glass of it may be taken twice a-day. It likewise relieves the gout in the stomach, when taken in a large dose.

Acid Elixir of Vitriol.—Take of the aromatic tincture, one pint; oil of vitriol, three ounces. Mix them gradually, and after the fæces have subsided, filter the elixir through paper, in a glass funnel.

This is one of the best medicines which I know for hysteric and hypochondriac patients, afflicted with flatulencies arising from relaxation or debility of the stomach and intestines. It will succeed where the most celebrated stomachic bitters have no effect. The dose is from ten to forty drops, in a glass of wine or water, or a cup of any bitter infusion, twice or thrice a-day. It should be taken when the stomach is most empty.

Camphorated Spirit of wine.—Dissolve an ounce of camphor in a pint of rectified spirits.

This solution is chiefly employed as an embrocation in bruises, palsies, the chronic rheumatism, and for preventing gangrenes. The above quantity of camphor, dissolved in half a pound of the volatile aromatic spirit, makes *Ward's Essence*.

Spirit of Mindererus.—(*Solution of acetated Ammonia.*) Take of volatile sal ammoniac, any quantity. Pour on it gradually distilled vinegar, till the effervescence ceases.

This medicine is useful in promoting a discharge both by the skin and urinary passage. It is also a good external application in strains and bruises. When intended to raise a sweat, half an ounce of it in a cup of warm gruel may be given to the patient in bed every hour till it has the desired effect.

VINEGARS.

VINEGAR is an acid produced from vinous liquors by a second fermentation. It is a useful medicine both in inflammatory and putrid disorders. Its effects are, to cool the blood, quench thirst, counteract a tendency to putrefaction, and allay inordinate motions of the system. It likewise promotes the natural secretions, and in some cases excites a copious sweat, where the warm medicines, called alexipharmic, tend rather to prevent that salutary evacuation.

Vinegar is also advantageously employed in burns and scalds; by keeping the parts constantly wet with it, by means of linen rags. "In severe burns and scalds," observes Mr. Cleghorn, "which have recently happened, and which are attended with large blisters, excoriations or loss of substance, the vinegar must be constantly applied till the heat and pain nearly cease, which will happen in from two to eight hours, according as the injury is more or less severe. The sores must be covered with rags or cloths well wetted, which, as often as they dry, or any sensation of pain or heat returns, must be wetted afresh with the vinegar, for two, three, or four hours."

Weakness, faintings, vomitings, and other hysteric affections, are often relieved by vinegar applied to the mouth and nose, or received into the stomach. It is of excellent use also in correcting many poisonous substances, when taken into the stomach; and in promoting their expulsion, by the different emunctories, when received into the blood.

Vinegar is not only a useful medicine, but serves likewise to extract, in tolerable perfection, the virtues of several other medicinal substances. Most of the odoriferous flowers impart to it their fragrance, together with a beautiful purplish or red colour. It also assists or coincides with the intention of squills, garlic, gum ammoniac, and several other valuable medicines.

These effects, however, are not to be expected from every thing that is sold under the name of vinegar, but from such as is sound and well prepared.

The best vinegars are those prepared from French wines.

It is necessary for some purposes that the vinegar be distilled; but as this operation requires a particular chemical apparatus, we shall not insert it.

Vinegar of Squills.—Take of dried squills, two ounces; distilled vinegar, two pints. Infuse for ten days or a fortnight in a gentle degree of heat, afterwards strain off the liquor, and add to it about a twelfth part of its quantity of proof spirits.

This medicine has good effects in disorders of the breast, occasioned by a load of viscid phlegm. Is also of use in hydropic cases for promoting a discharge of urine.

The dose is from two drachms to two ounces, according to the intention for which it is given. When intended to act as a vomit, the dose ought to be large. In other cases it must not only be exhibited in small doses, but also mixed with cinnamon-water, or some other agreeable aromatic liquor, to prevent the nausea it might otherwise occasion.

WATERS BY INFUSION.

Lime Water.—Pour two gallons of water gradually upon a pound of fresh burnt quicklime; and when the ebullition ceases, stir them well together; then suffer the whole to stand at rest, that the lime may settle, and afterwards filter the liquor through paper, which is to be kept in vessels closely stopped. The lime-water from calcined oyster-shells is prepared in the same manner.

Lime-water is principally used for the gravel; in which case, from a pint or two or more of it may be drank daily. Externally it is used for washing foul ulcers, and removing the itch, and other diseases of the skin.

Compound Lime Water.—Take shavings of guaiacum wood, half a pound; liquorice-root, one ounce; sassafras bark, half an ounce; coriander-seeds, three drachms; simple lime-water, six pints. Infuse without heat for two days, and then strain off the liquor.

In the same manner may lime-water be impregnated with the virtues of the other vegetable substances. Such impregnation not only renders the water more agreeable to the palate, but also a more efficacious medicine, especially in cutaneous disorders and foulness of the blood and juices.

It may be taken in the same quantity as the simple water.

Sublimate Water.—Dissolve eight grains of the corrosive sublimate in a pint of cinnamon-water. If a stronger solution be wanted, a double or triple quantity of sublimate may be used.

The principal intention of this is to cleanse foul ulcers, and consume proud flesh.

Styptic Water.—Take of blue vitriol and alum, each an ounce and a half; water, one pint. Boil them until the salts are dissolved, then filter the liquor, and add to it a drachm of the oil of vitriol.

This water is used for stopping a bleeding at the nose, and other hæmorrhages; for which purpose cloths or dossils dipped in it must be applied to the part.

Tar Water.—Pour a gallon of water on two pounds of Norway tar, and stir them strongly together with a wooden rod; after they have stood to settle for two days, pour off the water for use.

Though tar-water falls greatly short of the character which has been given of it, yet it possesses some medicinal virtues. It sensibly raises the pulse, increases the secretions, and sometimes opens the body, or occasions vomiting.

A pint of it may be drank daily, or more, if the stomach can bear it. It is generally ordered to be taken on an empty stomach, viz. four ounces morning and evening, and the same quantity about two hours after breakfast and dinner.

WINES.

THE effects of wine are, to raise the pulse, promote perspiration, warm the habit, and exhilarate the spirits. The red wines, besides these effects, have an astringent quality, by which they strengthen the tone of the stomach and intestines, and by this means prove serviceable in restraining immoderate secretions. The thin sharp wines have a different tendency. They pass off freely by the different emunctories, and gently open the body. The effects of the full-bodied wines are, however, much more durable than those of the thinner. All sweet wines contain a glutinous substance, and do not pass off freely. Hence they will heat the body more than an equal quantity of any other wine, though it should contain fully as much spirit. From the obvious qualities of wine, it must appear to be an excellent cordial medicine. Indeed, to say the truth, it is worth all the rest put together. But to answer this character, it must be sound and good. No benefit is to be expected from the common trash that is often sold by the name of wine, without possessing one drop of the juice of the grape. Perhaps no medicine is more rarely obtained genuine than wine. Wine is not only used as a medicine, but is also employed as a *menstruum* for extracting the virtues of other medicinal substances; for which it is not ill adapted, being a compound of water, inflammable spirit and acid; by which means it is enabled to act upon vegetable and animal substances, and also to dissolve some bodies of the metallic kind, so as to impregnate itself with their virtue, as steel, antimony, &c.

Anthelmintic Wine.—Take of rhubarb, half an ounce; worm-seed, an ounce. Bruise them, and infuse without heat in two pints of red Port wine for a few days, then strain off the wine.

As the stomachs of persons afflicted with worms are always debilitated, red wine alone will often prove serviceable. It must, however, have still better effects when joined with bitter and purgative ingredients, as in the above form.—A glass of this wine may be taken twice or thrice a-day.

Antimonial Wine.—Take glass of antimony, reduced to a fine powder, half an ounce; Lisbon wine, eight ounces. Digest, without heat, for three or four days, now and then shaking the bottle; afterwards filter the wine through paper.

The dose of this wine varies according to the intention. As an alterative and diaphoretic, it may be taken from ten to fifty or sixty drops. In a large dose it generally proves cathartic, or excites vomiting.

Bitter Wine.—Take of gentian-root, yellow rind of lemon-peel, fresh, each one ounce; long pepper, two drachms; mountain wine, two pints. Infuse without heat for a week, and strain out the wine for use.

In complaints arising from weakness of the stomach, or indigestion, a glass of this wine may be taken an hour before dinner and supper.

Ipecacuanha Wine.—Take of ipecacuanha, in powder, one ounce, mountain wine, a pint. Infuse for three or four days; then filter the tincture.

This is a safe vomit, and answers extremely well for such persons as cannot swallow the powder, or whose stomachs are too irritable to bear it. The dose is from one ounce to an ounce and a half.

Chalybeate, or Steel Wine.—Take filings of iron, two ounces; cinnamon and mace, of each two drachms; Rhenish wine, two pints. Infuse for three or four weeks, frequently shaking the bottle; then pass the wine through a filter.

In obstructions of the *meneses*, this preparation of iron may be taken, in the dose of half a wine-glass twice or thrice a-day.

The medicine would probably be as good if made with Lisbon wine, sharpened with half an ounce of the cream of tartar, or a small quantity of the vitriolic acid

Stomach Wine.—Take of Peruvian bark, grossly powdered, an ounce; cardamom-seeds, and orange-peel, bruised, of each two drachms. Infuse in a bottle of white Port or Lisbon wine for five or six days; then strain off the wine.

This wine is not only of service in debility of the stomach and intestines, but may also be taken as a preventive, by persons liable to the intermittent fever, or who reside in places where this disease prevails. It will be of use likewise to those who recover slowly after fevers of any kind, as it assists digestion, and helps to restore the tone and vigor of the system.

A glass of it may be taken two or three times a-day.

GLOSSARY ;

OR,

EXPLANATION OF TECHNICAL TERMS.

- ABDOMEN**, the belly.
Abortion, miscarriage.
Abscess, a tumor containing matter.
Absorbents, medicines to correct acidity and absorb or dry up superfluous moisture.
Acescent, having a tendency to acidity.
Acrid, sharp and corrosive.
Acute, this term is applied to a disease which is violent, and tends to a speedy termination.
Adipose, fat.
Adult, of full age, beyond puberty.
Affusion, pouring one thing on another.
Afterbirth, or *placenta-cake*, is the substance by which the child is connected with the mother in the womb.
After-pains, pains that occur after labor.
Aliment, nourishment.
Alimentary canal, or *tube*, the stomach and intestines.
Alkali, any substance which mingled with acid, produces fermentation.
Anodyne, composing medicines, and such as mitigate pains.
Anormal, irregular, unnatural.
Antidote, a medicine to destroy poisons.
Antiflogistics, drams.
Antiphlogistic, counteracting inflammation.
Antiscorbutic, good against the scurvy.
Antiseptics, medicines to correct putridity or rottenness.
Antispasmodic, whatever tends to prevent or remove spasm.
Antispasmodics, medicines for curing spasms, as laudanum and ether.
Anus, the fundament.
Aperient, opening.
Aphous, resembling the thrush.
Apyrexia, the period of intermission in agues.
Areola, the circle which surrounds the nipple on the breast.
Aromatic, spicy, pungent.
Artery, a conic canal, conveying the blood from the heart to all parts of the body.
Arthritis, rheumatic pains of the joints.
Astringents, medicines to correct looseness and debility.
Asphyxia, apparent death, suspended animation.
Asthenia, diminished vital energy.
Attenuants, medicines for reducing the body.
Ataxic, irregularity of the symptoms, or of the animal functions.
BELLADONNA, deadly night shade.
Bile, or *gall*, a fluid secreted by the liver into the gall-bladder, and thence discharged into the intestines for the purpose of promoting digestion.
Blennorrhæa, a morbid secretion of mucus.
Bougie, a taper body, introduced into a passage or sinus, to keep it open, or to enlarge it.
Bronchia, the air tubes in the lungs.
Bronchotomy, an incision into the wind-pipe.
Bulbous root, as garlic and onion—it is either
Solid, as in the tulip or turnip ;
Scaly, as in the lily ;
Coated, as in the onion.
Bulimia, insatiable craving for food.
CACHEXIA, a general weak, relaxed, and disordered state, without fever.
Calculus, stony or gravelly.
Callous, hard or firm.
Cantharides, the Spanish flies, used in blisters.
Capillary-vessels—Capillaries, the very minute vessels between the arteries and veins.
Capsule, a dry hollow vessel, containing the seed or fruit.
Cardia, the upper orifice of the stomach.
Cardiac region, the pit of the stomach.
Carious, rotten, applied principally to the bones and teeth.
Carminatives, medicines for dispelling wind.
Carotids, the arteries that convey the blood to the head.
Catamenia, the monthly discharge of females.
Cataplasm, a poultice, or soft plaster.
Catarrh, a discharge from the head or throat.
Cathartic, a purge.
Catheter, a pipe to draw off urine.
Caustics, burning applications.
Cautery, the act of burning with a hot iron or caustic.

Cephalic, relating to the head.
Cerebral, relating to the brain.
Cerebrum, the brain.
Cervical vertebrae, the joints of the spine, in the neck.
Cervix uteri, neck of the uterus.
Chronic, lingering disease, in opposition to acute.
Chyle, a milky fluid, separated from the aliment in the intestines, mixing with and forming the blood.
Chyme, the food after it has undergone the process of digestion in the stomach, and has passed into the bowels.
Coagulum, a curd.
Coma, profound lethargic stupor, or sleep.
Comatose, morbidly sleepy.
Compress, several folds of linen rags, a bandage.
Confluent, running together.
Congestion, the accumulation of blood in a part.
Constipation, obstruction, costiveness.
Contagion, infectious matter.
Contusion, a bruise.
Convalescence, recovery from sickness.
Convulsions, violent motions, fits.
Corroborants, tonics, or strengthening medicines.
Corrosive, substances that consume, or eat away.
Cosmetic, beautifying.
Crudity, rawness, indigestion.

DECOCTION, a preparation by boiling.
Decumbent, lying down or declining.
Deglutition, the act of swallowing.
Dejections, alvine, evacuations by the bowels.
Deleterious, poisonous, deadly.
Delirium, light-headedness.
Demoniacal, baneful, hurtful.
Demulcents, soothing, mucilaginous fluids, as flax-seed tea.
Dentition, teething.
Detergent, cleansing.
Diagnosis, the distinguishing marks of particular diseases.
Diaphoretic, promoting perspiration.
Diaphragm, the muscular partition between the chest and abdomen.
Diarrhœa, a looseness.
Diathesis, disposition or habit of body.
Dietetic, relating to diet, or regimen.
Diluent, bland drinks.
Discutient, a medicine that has the power to repel.
Dislocation, a joint put out of place.
Disposition, tendency.
Diuretics, medicines that increase the flow of urine.
Drastics, active or strong purges.
Duodenum, the first twelve inches of the small intestines.
Dyspeptic, belonging to bad digestion.
Dysuria, difficulty and pain in passing urine.

ECCHYMOSIS, a tumor, the effect of blood-letting.
Efflorescence, eruption, or the redness round it.
Effluvia, exhalation.
Ejections, discharges from the stomach by vomiting.
Emesis, vomiting.
Emetic, a medicine that causes vomiting.
Emaciation, wasting of flesh.
Empiric, a quack.
Emulsion, a milk-like fluid, formed by mixing oily or resinous substances, by means of mucilage, with water.
Enamel, the outside covering of the teeth.
Encephalic, relating to the cavity of the skull.
Encephalon, the brain, with its membranes.
Endemic, a disease peculiar to a certain district.
Enema, a clyster, an injection.
Enervate, to weaken.
Engorgement, an accumulation and stagnation of fluids in a part.
Enuresis, involuntary discharge of urine.
Epidemic, contagious.
Epidermis, the outer skin.
Epispastics, substances that blister the skin, as Spanish flies.
Epistaxis, bleeding from the nose.
Equilibrium, equal in weight.
Eruetation, a belch.
Eruption, breaking out in pustules.
Errhines, substances used to produce sneezing.
Erysipelas, St. Anthony's fire.
Erythema, a slight inflammation of the skin.
Exacerbation, the increase of a disease.
Exanthemata, acute eruptive diseases.
Excoriation, the loss of the skin.
Excitability, the capacity of being excited by stimuli.
Excitement, the action caused by stimuli.
Excretion, discharge of animal fluids, or matter.
Exhibit, to administer.
Expectorants, medicines that promote spitting.
Exsanguious, bloodless, with but little blood.
Extremities, arms and legs.

FÆCES, excrements.
Farinaceous, made of meal.
Fascia, a tendinous expansion.
Fauces, the posterior part of the mouth, or top of the throat.
Febrifuge, a medicine that has the power of arresting the progress of an intermitting fever; as bark.
Febrile, feverish.
Fetid, of an offensive smell.
Fibrous, composed of small threads or fibres.
First passages, stomach and bowels.
Fistula, a deep tube-like ulcer.
Flatulent, producing wind.
Flooding, an overflow of the menses.
Fœtus, the child in the womb.

Fumentation, partial bathing, by the application of flannels dipped in liquids.
Foramen, an opening, or hole.
Fracture, a broken bone.
Friction, the act of rubbing.
Fungus, proud flesh.
Function, the action or office performed by an organ.
Fumigation, a vapor raised by burning.

GANGRENE, a feeble circulation, followed by mortification.
Gargle, a wash for the mouth and throat.
Gastralgia, pains in the stomach without fever.
Gastric, relating to the stomach.
Gastritis, inflammation of the stomach.
Gastro-enteritis, inflammation of the stomach and bowels.
Gestation, riding in a carriage, or any locomotion without bodily exertion.
Gland, a secretory organ.
Glutinous, gluey, sticky.
Grinding, or after-pains: pains that occur after labor.
Gustatory, relating to the taste.
Guttatim, by drops.

HÆMATEMESIS, vomiting of blood.
Hæmaturia, voiding bloody urine.
Hæmoptysis, bleeding from the lungs.
Hæmorrhage, bleeding from any part of the body.
Hæmorrhoids, piles.
Hectic, a slow habitual fever, with sweats and emaciation.
Hemicrania, pain on one side of the head.
Hemiplegia, palsy on one side.
Hepatic, relating to the liver.
Hernia, a rupture.
Herpetic, having the character of tetter.
Humoral, relating to the fluids, particularly the blood.
Hydragogue, a purge that produces watery stools.
Hydrocephalus, dropsy in the head.
Hydropic, dropsical.
Hypercatharsis, excessive purging.
Hypochondriacal, melancholy, very dejected, low in spirits.

IATRALEPTIC, the application of remedies externally.
Icteroide, yellow, jaundice-like.
Ichor, a thin watery humor.
Idiopathic, an original affection of a part.
Idiosyncrasy, any peculiar habit.
Ileum, the lower part of the small intestines.
Iliac region, the flanks, the lateral and lower parts of the abdomen.
Imbecility, debility, weakness.
Inopisthume, a collection of purulent matter.
Impetigo, a species of ringworm.
Inanition, emptiness.
Incarnating, healing.

Incrassate, to thicken.
Indigenous, native to a country.
Induration, hardening.
Infection, contagion.
Inflammation, an increased action in a part.
Inflated, distended, as if inflated like a blown up bladder.
Infusion, steeping any thing in liquor without boiling, as tea is made.
Inhale, to draw in by breath.
Inspissate, to thicken.
Integuments, the skin.
Intestinal, belonging to the intestines, or guts.
Irrespirable, unfit to be breathed.
Irritability, the capacity of being excited into action.
Ischuria, difficulty or stoppage of urine.

LACTEALS, vessels containing chyle.
Lactation, the act of suckling.
Languor, want of strength or spirits.
Laxatives, relieving costiveness.
Leucophlegmatic, a pale, relaxed, debilitated, and torpid state of the body.
Leucorrhæa, the whites.
Levigated, reduced to a fine powder.
Ligature, a bandage; any thing tied round another.
Ligneous, woody.
Liniment, a very thin ointment.
Lithiasis, a disposition to discharge gravelly matter with the urine.
Lithontriptic, a remedy used for dissolving stones in the kidneys or bladder.
Lotion, a wash.
Lochial discharge, or cleansings, a discharge from the womb.
Lumbago, rheumatism in the loins.
Lymphatics, vessels that carry white fluids.

MALARIA, pestiferous exhalations from marshes and putrifying substances.
Mastication, act of chewing.
Maturity, of full years.
Meconium, the infant's first or black stools.
Membrane, a web of fibres, interwoven, for covering certain parts.
Meninges, the coverings of the brain.
Meningitis, inflammation of the coverings of the brain.
Menses, } the monthly courses.
Menstruation, }
Metastasis, a translation of a disease from one part to another.
Mephitic, suffocating, noxious.
Miasmata, the same as malaria.
Miliary eruption, an eruption of pustules resembling the seeds of millet.
Morbid, diseased, corrupt.
Morbific, capable of causing diseases.
Mucilage, a glutinous, slimy substance.
Mucus, resembling the matter discharged from the nose, lungs, &c.

NARCOTICS, medicines producing torpor and sleep.

Nausea, an inclination to vomit.

Nervous, irritable.

Nephritic, affections of the kidneys.

Neuralgia, painful affections of the nerves.

Normal, natural, healthy.

Nosology, a systematic arrangement, explanation, and definition of diseases.

EDEMATOUS, swelled, as in a dropsical state of the skin.

Esophagus, the gullet.

Olfactory, relating to the sense of smelling.

Opiates, medicines which produce sleep, as opium.

Ophthalmia, inflammation of the eyes.

Organic affection, a disease in which more or less of the substance of a part is changed or disordered.

Orthopnoea, great difficulty in breathing.

Ossified, changed into a bony structure.

Os uteri, mouth of the womb.

PANCREAS, the sweet-bread.

Paracentesis, making an opening into the cavity of the abdomen or chest, to give exit to fluids; tapping.

Paralysis, palsy.

Paroxysm, a periodical fit or attack.

Pathology, doctrine of the causes and nature of diseases.

Pectoral, medicines adapted to cure diseases of the breast.

Pelvis, the bones at the lower part or trunk of the body.

Pericardium, the membranous sack surrounding the heart.

Peristaltic motion, the vermicular motion by which the bowels push forward their contents.

Pestilential, infectious.

Pharynx, the top of the gullet.

Phlegmatic, relaxed and abounding with phlegm.

Phlogistic, inflammatory.

Phthisical, consumptive.

Placenta-cake,—see *after-birth*.

Plethoric, of a full habit.

Plenitude, fulness of blood.

Pleuritic, of the character of pleurisy, attended with pain in the side of the chest.

Post mortem, after death.

Predisposition, susceptibility of disease.

Preternatural, unusual, not natural.

Prolapsus, the falling down, or out.

Prostate gland, a gland situated at the neck of the bladder.

Proximate cause, the immediate cause of disease.

Ptyalism, salivation.

Puerperal, of, or belonging to child-bed.

Pulmonary, belonging to the lungs.

Purulent, matter of good quality.

Puruloid, resembling pus or matter.

Pus, the yellowish thick fluid or matter formed by inflammation.

Pustule, a purple or small swelling.

Putrescence, rottenness.

Pylorus, the lower orifice of the stomach.

Pyrexia, fever.

Pyrosis, water-brash, or the heart-burn.

QUARTAN, a periodical disease returning every seventy-two hours.

Quickening, the motion of the child felt by the mother in the womb.

Quotidian, daily; an ague that returns daily.

RACHIALGIA, colic, with costiveness and vomiting.

Rachitis, rickets.

Ramollissement, softening.

Rectum, the strait gut in which the fæces are contained.

Red gum, an eruption so called.

Refrigeration, a chill, coldness.

Regimen, regulation of food, air, exercise, &c.

Remote cause, the inducing cause of disease.

Repletion, the act of filling the body with food.

Resolution, a termination without suppuration.

Resolvents, dissolving medicines.

Respiration, the act of breathing.

Resuscitation, reviving, bringing to life.

Retention, the retaining of some natural discharge.

Rheumy, an acrid discharge.

Rubefacients, external applications that inflame the skin.

SALINE, consisting of salt.

Saliva, spittle.

Sanative, healing.

Sanguiferous, carrying blood.

Saponaceous, soapy.

Saturnine lotion, lead water.

Scorbutic, of, or belonging to, scurvy.

Scirrhus, a hard, degenerated tumefaction of a gland.

Scrofulous, of, or belonging to, the king's evil.

Sabaceous, suet-like matter.

Secondary, not primary; a secondary fever is that which occurs after crisis.

Secretion, the separation of a fluid or substance from the blood, by the action of a living organ.

Secretory vessels, or organs, that separate a peculiar fluid or substance from the blood.

Secundines, the placenta, and membranes.

Sedatives, composing medicines.

Semen, the seed.

Semicupium, warm bath, the body being immersed only up to the middle.

Sensorium, the brain, the centre of feeling.

Serous, watery.

Serrated, notched like a saw.

Sinapism, a poultice made of flour, mustard, or vinegar.

Slough, the parts that separate from a sore.

Soluble, loose, laxative.

Spasm, cramp, convulsion.

Specific, an infallible remedy.

Spine, the back bone.

Stamina, the constitution or habit of the body.

Stimulants, irritative medicines.

Stomachics, medicines for the stomach.

Strangury, a difficulty of making water.

Striated, channelled, furrowed.

Strumous, scrofulous.

Stupor, a suspension of sensibility.

Styptic, a medicine stopping the discharge of blood.

Sudorifics, medicines to promote sweating.

Suppository, a candle, or any other substance or composition, introduced into the rectum to produce a stool.

Subsultus tendinum, a convulsive, sudden twitching of the sinews.

Swooning, fainting.

Symptomatic, the consequence of some other affection.

Syncope, fainting or swooning.

Synocha, inflammatory fever.

TARSUS, the edge of the eye-lid.

Temperament, a peculiar habit of body.

Temperature, state of the air.

Tenesmus, an ineffectual and painful urging to go to stool.

Tertian, returning every third day.

Tetany, the lock-jaw.

Therapeutic, relating to the employment of remedies.

Thoracic, belonging to the chest.

Thorax, the chest.

Tonic, bracing, strengthening.

Terminals, griping pain.

Topical, local, confined to the diseased part.

Tubercles, small, hard tumors, resembling cheese in their internal structure.

Tumor, a swelling.

Turgescence, an over fulness.

Type, a mark.

Typhoid, resembling typhus fever.

Typhus, a genus of fever, comprehending those called nervous, yellow, and putrid.

ULCER, a sore generally ill-conditioned.

Umbilical-cord, the navel-string.

Ureters, the tubes which convey the urine from the kidneys to the bladder.

Urethra, the canal which conveys the urine.

Uterine, belonging to the womb.

Uterus, the womb.

Utero-gestation, the term of pregnancy.

Uvula, the palate.

VACCINE, vaccinous, belonging to, or matter of, the cow-pox.

Vagina, the passage to the womb.

Variolus, smallpox matter.

Vascular, belonging to the vessel.

Venesection, blood-letting.

Venous, belonging to the veins.

Venomous, } poisonous.

Virulent, }

Vermifuge, worm-dispelling medicines.

Vertigo, giddiness.

Vesicating, blistering.

Villous, shaggy, rough, hairy.

Virus, poisonous matter.

Viscera, the entrails.

Viscid, glutinous, tenacious

Vital, the seat of life.

WHITES, the discharge from the womb.



APPENDIX,

ILLUSTRATED WITH

EIGHTY-FOUR ENGRAVINGS,

FOUR OF WHICH ARE COLORED,

TREATING UPON THE

BONES,
MUSCLES,
DIGESTION,
CIRCULATION OF THE BLOOD,
RESPIRATION,
ANIMAL HEAT,
SECRETION AND NUTRITION,
NERVOUS SYSTEM,
FIVE SENSES, &c.

TABLE I.

Represents a front view of the Male Skeleton

HEAD AND NECK.

- a*, The frontal bone.
- b*, The parietal bone.
- c*, The temporal bone.
- d*, A portion of the sphenoid bone.
- e*, The nasal bone.
- f*, The malar, or cheek bones.
- g*, The superior maxillary, or upper jaw bone.
- h*, The lower jaw.
- i*, The bones of the neck.

TRUNK.

- a*, The twelve bones of the back.
- b*, The five bones of the loins.
- c, d*, The breast bone, composed of two pieces.
- e, f*, The seven true ribs.
- g, g*, The five false ribs.
- h*, The rump bone, or sacrum.
- i*, The hip bones.

UPPER EXTREMITY.

- a*, The collar bone.
- b*, The shoulder blade.
- c*, The upper arm bone.
- d*, The radius.
- e*, The ulna.
- f*, The carpus, or wrist.
- g*, The bones of the hand.
- h*, The first row of finger bones.
- i*, The second row of finger bones.
- k*, The third row of finger bones.
- l*, The bones of the thumb.

LOWER EXTREMITY.

- a*, The thigh bone.
- b*, The knee pan.
- c*, The tibia, or large bone of the leg.
- d*, The fibula, or small bone of the leg
- e*, The heel bone.
- f*, The bones of the instep.
- g*, The bones of the foot.
- h*, The first row of toe bones.
- i*, The second row of toe bones.
- k*, The third row of toe bones.

TABLE I.

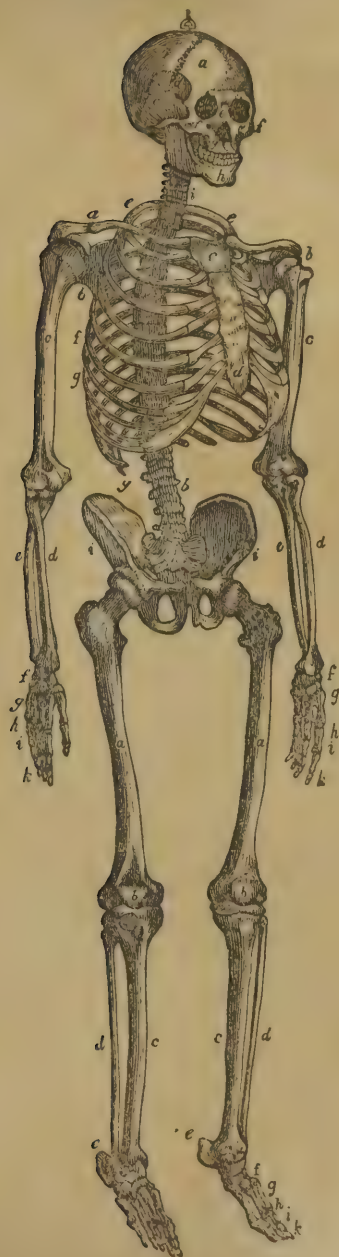


TABLE II.

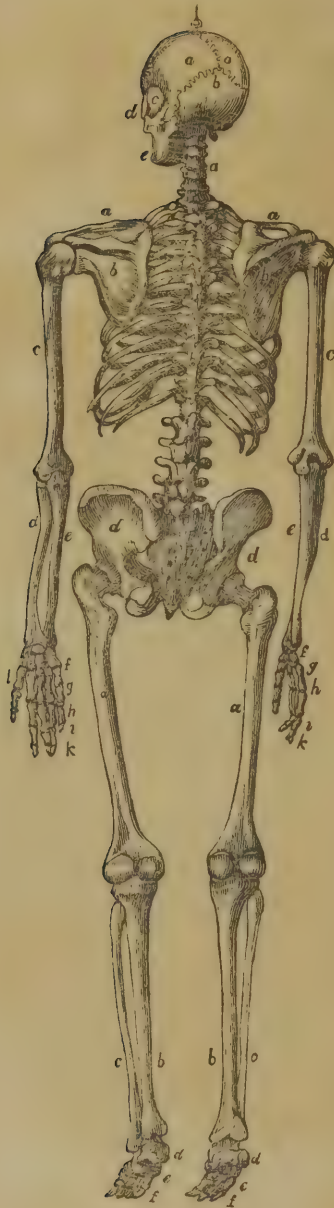


TABLE II.

Represents a back view of the Male Skeleton

THE HEAD.

- a*, The parietal bone.
- b*, The occipital bone.
- c*, The temporal bone.
- d*, The cheek bone.
- e*, The lower jaw bone.

NECK AND TRUNK.

- a*, The bones of the neck.
- b*, The bones of the back.
- c*, The bones of the loins.
- d*, The hip bone.
- e*, The sacrum.

UPPER EXTREMITY.

- a*, The collar bone.
- b*, The blade bone.
- c*, The upper bone of the arm.
- d*, The radius.
- e*, The ulna.
- f*, The bones of the wrist.
- g*, The bones of the hand.
- h*, The first row of finger bones.
- i*, The second row of finger bone
- k*, The third row of finger bones.
- l*, The bones of the thumb.

LOWER EXTREMITY.

- a*, The thigh bone.
- b*, The large bone of the leg.
- c*, The small bone of the leg.
- d*, The heel bone.
- e*, The bones of the instep.
- f*, The bones of the toes.

AN OUTLINE

OF THE

ANATOMY OF THE HUMAN BODY.

A COMPETENT knowledge of the structure of the human body is essentially necessary to every one who attempts to repair the many injuries to which the human machine is constantly liable, from the operation of external causes, producing fractures, dislocations, sprains, and various kinds of flesh wounds. And an acquaintance with the situation of the various organs contained within the cavities of the body, their uses, and the relations they bear one to another, is no less requisite in order to treat the functional disorders of the system with accuracy, or even with a rational prospect of success. It is thought necessary, therefore, to append to this work, such an outline of the anatomy of the human system, together with its physiology, as may enable the heads of families to avail themselves of the practical part of the treatise to a much greater extent than they could possibly do without such knowledge. If, however, it should subserve no other valuable purpose, it will, at least, serve to show that the human machine is too complicated in its structure and operations, and too finely organized, to be lightly dealt with by the ignorant and assuming, as is too often the case in this age of empiricism.

To those who do not wish to make a practical use of the knowledge it is designed to impart in these chapters, it cannot fail to prove interesting—as much so as the study of any of the natural sciences—and no one, certainly, can engage in a nobler pursuit than the acquisition of such knowledge. The principal difficulty is, to present the subject in a light at once popular and intelligible. As remarked by Mr. John Bell, “It is not easy to explain, in their natural order, the various parts of which the human body is composed; for they have that mutual dependence upon each other, that continual circle of action and reaction in their various functions, and that intricacy of connection, and close dependence, in respect to the individual parts, that, as in a circle there is no point of preference from which we should begin to trace its course, so in the human body there is no function so insulated from the other functions, no part so independent of other parts, as to determine our choice. We cannot begin without hesitation, nor hope to proceed in any perfect course; yet, from whatever point we begin, we may so return to that point, as to represent truly this consent of functions, and connection of parts, by which it is composed into one perfect whole.”

In their efforts to demonstrate human anatomy some anatomists begin with the skin, the tissue which surrounds and protects all the others, and thence proceed, tissue by tissue, to the internal parts; others commence internally, tracing the various parts of which the body is composed, until they arrive at the surface. It seems, however, most natural to begin with the bones, which may be considered the walls and pillars of the building, serving to sustain or defend all the other parts.

FORMATION OF BONE.

BEFORE the time of birth, all the bones of the body are cartilaginous ; and in the early stages of the fœtus, they are a pure, semi-transparent, tremulous jelly. Even in the last months, they are so flexible, that a long bone can be bent into a complete ring. This cartilage is not changed into bone ; but, as the child advances in age, it is, by slow degrees, removed by a set of vessels called *absorbents*, at the same time that the bones are forming by the agency of another set of vessels, depositing



bony matter. Cartilage is of a white color, dense, flexible, and highly elastic. Being smooth and almost insensible, it is well suited to the purpose of giving free and easy motion to the joints, without friction or irritation. The extremities of the bones forming joints, are, therefore, covered with gristle, and these surfaces are continually lubricated by a very slippery mucilaginous fluid named synovia ; and this fluid is prevented from escaping by a membranous bag or band called capsular ligament. The external ear, and a considerable part of the nose, remain cartilaginous through life. Only the small bones of the ear are perfectly ossified at birth. "Where a certain degree of strength with a considerable degree of flexibility, is required, cartilage supplies the place of bone." Hence, the inner end of each true rib is connected to the sternum by a cartilage of consid-

erable length, giving great freedom of motion to the ribs. The false ribs are also connected to each other by cartilage at their inner ends ; the breast-bone is terminated with it ; the eyelids are edged with it ; and the spinal column, which requires a union of great strength with almost perfect flexibility, is liberally supplied with it. "The ossification of broad bones, as those of the head, begins by one or more points, from which the osseous fibres issue in rays—the ossification of long bones, as in those of the extremities, begins by central rings, from which the fibres extend towards the ends of the bones—and that of irregularly shaped bones by different nuclei, as in the vertebræ." It is a process, which, at first, appears so rapid, that we should expect it to be soon complete ; but it becomes in the end a slow and difficult process ; the generality of bones being incomplete until about the twentieth year, and in some cases until a later period. It is forwarded by health, and retarded by disease. The cartilage forming the two ends of most of the bones, will separate from the body of the bone by maceration in water, up to the twentieth year, and it has been remarked by a medical writer as a curious coincidence of agreement, between the perfection of the body, and that which is agreed on as the period at which man becomes independent, or in common language, obtains his age ; this being the twenty-first year, and the first year of the completion of the skeleton. It is also worthy of remark, that while cartilage lays down the form of the skeleton in the embryo, it has no agency in forming the callus which

unites fractured bones. It is never met with in such cases, except where artificial joints have been formed at the place of fracture, in consequence of the process of ossification being impeded by motion or other accidents.

Bone, when completely matured, is composed of two distinct substances—the one animal, and organized; the other, earthy, and unorganized. The animal part of the bone consists principally of albumen, as has been recently demonstrated by Mr. Hatchett, of Great Britain, and not of gelatine as was formerly supposed. The earthy part is phosphate of lime, a substance of so indestructible a nature, that bones of animals are constantly met with, apparently but little changed, in situations where they must have remained during the revolutions of many centuries.



By subjecting one of the long bones to the action of diluted oil of vitriol, muriatic acid, or even strong vinegar, the earthy part is removed, and nothing remains but the animal, yet the form of the bone is unchanged; while it becomes so soft and flexible that it may be tied in a knot. By exposing bone to the action of a moderate fire, an opposite effect is produced—the animal part is removed, and the earthy remains, while the texture is but slightly altered—becoming white, extremely brittle, and losing much of its weight. The bones are liberally supplied with blood-vessels, and are covered by a delicate membrane called periosteum.



They are destitute of sensibility in health, yet become extremely sensible when diseased. In amputating a limb, if the bone be sound, no complaint is made while the surgeon is sawing through the bone, but if it be diseased, the patient is subjected to the most exquisite torture.

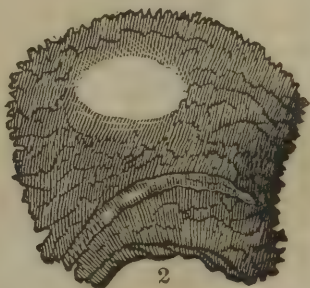
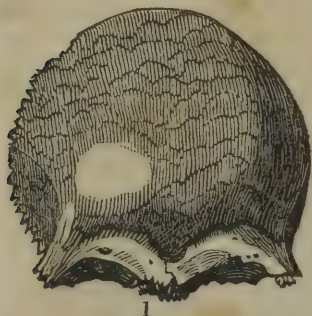
The chief uses of bone are, (in the language of a late popular writer,) “1. By its hardness and firmness to afford a support to the soft parts, forming pillars to which the more delicate and flexible organs are attached and kept in their relative positions. 2. To defend the soft and tender organs by forming a case in which they are lodged and protected, as that formed by the bones of the cranium for the lodgment and protection of the brain; by the bones of the spinal column for the lodgment and protection of the spinal cord; by the bones of the thorax, for the lodgment and protection of the lungs, the heart, and the great vessels connected with it. 3. By affording fixed points for the action of the muscles, and by assisting in the formation of joints to aid the muscles in accomplishing the function of locomotion.”

Among the most common accidents, of a serious character, to be met with, are fractures and dislocations; consequently, it is important that every man should know something about the form, situation, connection and use, of each individual bone of the body.

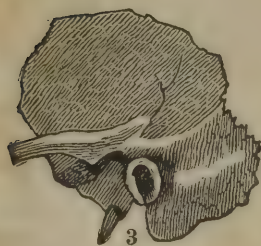
OF THE INDIVIDUAL BONES.

A PERFECT skeleton is usually estimated to consist of two hundred and fifty-two bones ; and, for description, these bones may be divided into three principal groups, viz.—1. the bones of the head—2. those of the trunk—3. those of the extremities or limbs.

The bones of the head comprehend those of the cranium or skull, and face. Those of the skull are eight in number, and form the cavity for enclosing the brain, its membranes and vessels. They are of a flattened form, and are composed of two plates, with a cellular structure between



them called diploë. 1. The frontal bone forms the forehead, and the upper part of the socket for the eye. 2. The parietal bones make up



the side walls of the head, and most of the vertex. 3. The temporal bones form the temple on either side, and are so named from the hair that covers them being the first to turn gray, marking the time of life. 4.

The occipital bone forms all the back part of the head, and part of its base, being the medium of bony connection between the skull and spine. 5. The ethmoid bone, is a small square bone dividing the hollow of the nose from the cavity of the skull, and so perforated by the nerves of smell in their passage to the nose, as to give it the appearance of a sieve, from which circumstance it derives its name.



6. The sphenoid bone is so named from its situation in the base of the skull, where it wedges in and locks together most of the other bones. It lies over the top of the throat, so that its processes form the back of the nostrils and roof of the mouth. The figure of the bone is not unlike that of the common bat.



These bones are joined together by means of seams or *sutures*, so called from the bones being indented or dove-tailed into each other. The *coronal* suture passes across the head, almost from ear to ear, and joins the frontal with the parietal bones: it is so named from being situated at that part of the head on which the victors in the games of the ancients wore their garlands. The *lambdoidal* suture commences behind one ear, passes over the head, and descends behind the other ear. In its course it resembles the Greek letter (Δ) lambda. It unites the occipital to the parietal bones above, and to the temporal bones below. The *sagittal* suture joins the two parietal bones. It extends from the coronal suture to the lambdoidal, and from lying between these two sutures, like an arrow between the string and bow, it receives its name. The squamous or temporal sutures unite the temporal bones to the frontal, parietal, and occipital bones. It is called the squamous or scaly suture, because the edges of the bones engaged in making it up, being thin, overlap each other like the scales of armor. Several other sutures serve to connect the bones of the skull and face, but need not be enumerated.



It is supposed that the division of the bones of the head into several pieces, by means of sutures, renders it less liable to severe injuries than if it were one entire sphere of bone. It is at birth, however, that the great wisdom of the contrivance is seen; as the bones, which are then at some distance from each other, can yield and overlap, and thus allow the head a change of shape, so as to suffer it to pass through, where otherwise the solid head must destroy both mother and child. This disposition of the bones also allows the head to be more easily formed and extended into a spherical and comely shape.

At the junction of the coronal and sagittal sutures in the infant, there is an opening termed the fontanelle, which is not closed in many instances until the child is three years old; and in children affected with rickets, or scrofula, not until a much longer period has elapsed. It is sometimes dilated to a very considerable extent in cases of hydrocephalus, or dropsy of the brain.

The bones of the face are fourteen in number, and are all united to form the upper jaw, nose, and sockets of the eyes. As they are not susceptible of motion, one with another, no benefit can be derived by the

general reader from a particular description of them. A very correct idea of their situation and connections can be obtained by consulting the drawing of the skeleton. The lower jaw bone is an exception in respect to motion. Its shape and use are familiar to every one.



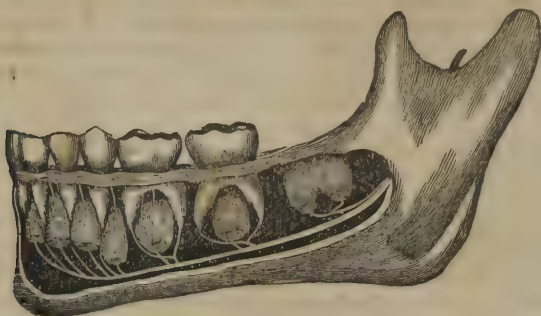
Each jaw in the adult contains sixteen teeth. The first four in each jaw are named *incisores*, or cutting teeth; the two next *canine*, or dog teeth, being pointed and suited for tearing; and the rest *bicuspides* and *molars*, or small and large grinders. The four last grinders are called *dentes sapientiæ*, or wisdom teeth, because they are not cut until the subject arrives at years of discretion. The first six teeth in either jaw, have, generally, but one root; the grinders have commonly two roots in the lower jaw, and three in the upper, and are most spread in the upper jaw, which seems necessary, to plant them securely in the sponge-like bone of which it is principally composed. "The internal part of the teeth has a strong resemblance to bone, but they have an external covering of a somewhat different character, called enamel. This substance is very hard, highly polished, insensible, and without any appearance of organization. If a portion of it be removed in any way, it is not replaced." The enamel is thicker on the surfaces of the teeth opposed to friction than on other parts; and is the most indestructible after death of all parts of the body, teeth being found in the most ancient places of sepulchre with scarcely any marks of decomposition.

The formation of teeth differs from that of bones. The teeth are not formed in cartilage, but in separate sacs. The "milk teeth" are twenty in number, and usually appear at the following periods, though there is great diversity in this respect.

- From five to eight months after birth, the four central incisors;
- From seven to ten, the four lateral incisors;
- From twelve to sixteen, the four anterior grinders;
- From eighteen to twenty, the four canine; and
- From eighteen to thirty-six, the four back grinders.

The rudiments of the permanent teeth are beginning to form before birth; and their development is almost precisely similar to that of the

temporary teeth. At an early period in the formation of the milk teeth, the investing sac gives off a small process or bud, which constitutes the



rudiment of the permanent tooth. This gradually matures, until finally, as the bodies of the permanent teeth are completed and approach the gum, the roots of the temporary are removed by absorption, till the bodies of the latter only are left fixed mechanically in the gum, and are removed or fall away at the slightest effort. The permanent teeth being more in number, and of larger size than the temporary, are developed at successive intervals, so as to correspond exactly with the increasing size of the jaws from infancy to manhood. The first permanent tooth usually appears between the sixth and seventh years, and the others appear in successive years, until the wisdom teeth terminate the process between the nineteenth and twenty-first years.

There are occasional freaks of nature in regard to the teeth, as well as most other parts of the body. For instance, Louis XIV. of France and Richard III. of England are said to have been born with teeth developed; and cases are mentioned of very old persons, who never had any teeth.

The *os hyoides*, or bone of the tongue, resembles in figure a horse-shoe, and is supported between the lower jaw and larynx by its attachment to the base of the tongue, and various muscles and ligaments which proceed from the neighboring parts. It serves as a point of insertion for many of the muscles concerned in deglutition and speech.

The bones of the **TRUNK** include those of the *spine*, the *thorax*, and the *pelvis*.

The spine consists of twenty-four bones, of which seven belong to the neck, twelve to the back, and five to the loins. These bones turn or play on each other, and hence are called *vertebræ*. They are articulated or joined to each other by strong ligaments, running from the body and processes of one bone to those of another; the processes being so fashioned as to make it the strongest kind of union admitting of motion that could be formed. The processes, besides giving attachment to various ligaments, serve as points for the origin and insertion of many strong and powerful muscles, principally engaged in keeping the body erect, and in performing the different movements of which the spine is susceptible. Between the *vertebræ* is interposed a substance cartilaginous at the edges, and for some little distance inwards dense and firm, but gradually degenerating to a fluid as the centre is approached. To this fluid the column owes its motion, the concave surfaces of the bones rolling on it, the

dense cartilage at the edges being remarkably elastic. This intervertebral substance, or rather the fluid portion of it, is absorbed in part during the day, from the weight of the parts above, and is re-deposited at night when the body is at rest in a horizontal position. The effect of weight on the whole intervertebral substance is so great, that an individual who has exercised on foot all day, will measure from a half to three quarters of an inch less in height in the evening than in the morning of the same day.

The two first bones of the neck are called *atlas* and *dentatus*; the first because the globe of the head rests on it, and the second because it has an axis or tooth-like process upon which the first turns. The vertebræ of the back are connected with the heads of the ribs; those of the loins are larger than the others, and are distinguished for greater strength and facility of motion.

The spinal column is perforated by a canal, in which is lodged the spinal marrow or elongation of the brain. Nerves are given off from it throughout its whole length. One nerve passes from it at the junction of each vertebra; or rather two, one being given towards each side. The nerves do not pass through holes in the bone, as is the case in the skull, but beneath the articulating processes. Viewed from behind, the spinal column is perfectly straight, having no lateral inclination; when subjected to a side view, it describes several large curves, which have been not inaptly compared to Hogarth's line of beauty. These curvatures enable it to give better support to the organs contained in the chest and abdomen, than it could do if straight. A very good idea of the human spine may be obtained by viewing that of quadrupeds.

There are generally twelve ribs on either side. The seven upper ones are called true ribs, because they extend from the spine to the breast-bone, into which each rib is implanted by means of its own proper cartilage. The remaining five are called false ribs, because they are not connected directly with the breast-bone, but are joined one with another, the cartilage of the lower rib being joined and lost in that of the rib above. The ribs give form and capacity to the chest, and afford a pretty secure lodgment for its contents. They have a motion, upwards and outwards, and assist largely in respiration. A man resided in Kentucky, several years since, who had no ribs, his chest being encircled with a solid plate of bone.

The *sternum*, or breast-bone, lies on the forepart of the chest over the heart, and completes the bony fabric of the thorax. It is composed of eight pieces in infancy, of three in more advanced life, and in old age it becomes one entire piece. It serves as a defence for the heart, a medium of attachment to the ribs, and a fulcrum on which the collar bones may roll. It is terminated below by a cartilage, which runs down somewhat in the shape of a sword, from which circumstance it derives its name of *ensiform*.

The *pelvis* is an irregular circle of large, solid bones, placed between the trunk and lower extremities. It is so named from its resemblance to a basin. It consists, in the adult, of three large bones, two of which are very irregular, having no resemblance to any other object, on which account they have been called the *ossa innominata*. These form the sides and front of the pelvis. The back part consists of a triangular bone called the *sacrum*, to the lower extremity of which is attached, by a movable articulation, a small bone, which, from its resemblance to the beak

of a cuckoo, has been named the *coccygis*. The entire pelvis has free motions on the thigh bones, and also where it is connected with the loins; but its parts are so firmly bound together by strong ligaments, that they cannot be separated without extreme violence being done.

The *sacrum* receives its name from having been offered in sacrifice by the ancients. It seems to consist of only one curved bone, but is really made up of several pieces, which, in the child, are nearly as distinct as the vertebræ; hence the term *false vertebræ* has been applied to them. This bone is perforated by a canal for the continuation and termination of the spinal marrow. It also has large holes on each side for the transmission of nerves.

The *os innominatum*, in infancy, consists of three pieces. The upper portion is called the *ilium*, or haunch-bone; the under portion the *ischium*, or seat-bone; and the front division, which is the smallest of the three, the *pubis*, or share-bone. These bones are joined together in the socket formed for receiving the head of the thigh bone, by a very firm gristle or cartilage. This, before the age of puberty, is converted into bone, so that the three original bones are consolidated into one. The pelvis is so truly the centre of all the great motions of the body, that when we believe the motion to be in the higher parts of the spine, it is either the last vertebræ of the loins bending upon the top of the pelvis, or the pelvis itself rolling upon the head of the thigh bones. It contains the last bowel, the bladder, and, in the female, the organs of generation.

The thigh-bone is one of the most regular of the cylindrical bones; it is the largest bone in the skeleton, and possessed of great strength. Its body is composed of very compact materials, and is firm and polished, while the lower extremity is very large and spongy. The upper end of the bone, instead of being continued in a straight line, goes off almost at right angles, terminating in the head, a polished sphere. The neck, connecting the head with the shaft of the bone, is about one inch and a half long; and, owing to its oblique direction, bears the whole weight of the trunk. The body of this bone enjoys little or no rotary motion, though the head most commonly moves round its own axis. "From the oblique position of these bones it results, that there is a considerable distance between them above, while the knees are almost contiguous:—this situation of the thigh bone renders our progression quicker, surer, straighter, and in less room: for, had the knees been at a greater distance from each other, we must have been obliged to describe some part of a circle with the trunk of our body in making a long step; and when one leg was raised from the ground, our centre of gravity would have been too far from the base of the other, and we should consequently have been in danger of falling; so that our steps would neither have been straight nor firm, nor would it have been possible to walk in a narrow path, had our thigh-bones been otherwise placed." The joint made up by this bone and the pelvis is the strongest in the body, except the vertebral joints.

The leg has two bones, the *tibia* and *fibula*. The tibia is concerned with the thigh-bone in forming the knee-joint. It is situated on the inner part of the leg, forms the shin, and in connection with the lower end of the fibula and the astragalus makes up the ankle-joint. It derives its name from its resemblance to an ancient musical instrument. The fibula is attached to the tibia a little below the knee-joint, on the outside, and again at its lower end, where it forms the outer angle. It is a very slender bone, and serves for the attachment of muscles.

Immediately in front of the knee-joint is the *patella*, or knee-pan. It is a small flat bone, resembling in shape the common figure of the heart with its point downwards. It plays over the knee joint as a pulley. The four great muscles which extend the leg are attached to it.

The bones of the *tarsus*, or instep, are seven in number, and form a firm and elastic arch for supporting the body. Two of them only need be mentioned, the *astragalus* and the *os calcis*, or heel-bone. The first unites with the tibia and fibula in forming the ankle-joint; and the second gives a firm attachment to the largest tendon in the body, the *tendo-Achilles*, the rope by which the muscles on the posterior of the leg act. Its projection backwards gives it the power of a very long lever.

The bones of each superior extremity comprise those of the *shoulder*, the *arm*, the *fore-arm*, and the *hand*.

The shoulder has two bones, the *scapula*, or shoulder-blade, and the *clavicle*, or collar-bone. The shoulder-blade is a very thin bone, situated on the upper and back part of the chest. It is attached to the ribs by powerful muscles, which allow it free motion. At its upper edge there is a considerable projection or process, which is highly important, as it prevents the head of the *humerus*, or arm-bone, from slipping upwards. It also bears immediately the weight of burthens carried on the shoulder. Just beneath this process is a very slight cavity or depression for receiving the head of the arm-bone, or rather for its attachment; for there is but a very shallow socket, which renders this joint more subject to dislocation than any other in the body. It serves as the medium of connection between the body and upper limb. The collar-bone resembles in shape the italic *s*. It is connected, on either side, with the breast-bone in a peculiar manner. It has no capsular ligament, as other joints, but has a small movable cartilage interposed between it and the breast-bone, which, like a washer in machinery, facilitates motion, and lessens the friction. It is connected at its outer end with the shoulder-blade, by strong ligaments; and prevents the shoulder from falling forwards and downwards.

The upper arm-bone is called the *humerus*. It is a round, smooth bone, with a large cylindrical head, where it connects with the shoulder-blade. At the lower end it is somewhat twisted and flattened, which makes the elbow-joint a mere hinge, moving only in one direction. The motions which the arm enjoys by its articulation at the shoulder are to every side; besides which, it performs a small rotation round its own axis.

The fore-arm is composed of two bones, the *radius* and the *ulna*:—the first named from its resemblance to the spoke of a wheel, the second from its being often used as a measure. The radius alone is engaged in making up the wrist-joint on the part of the arm, and turns with the hand in all its rotatory motions. The ulna forms the elbow-joint. It is connected with the humerus by a hook-like elongation passing some distance around the end of that bone, between the condyles. All the actions of extending or bending the elbow, are performed by the ulna.

The wrist is composed of eight small bones, called *carpal*; while the bones of the hand, named *metacarpal*, are five in number. Each finger has three bones, called *phalanges*, and the thumb two. No advantage could result from a minute description of them.

Each ear has four small bones, which will be described in the chapter devoted to the "ORGANS OF SENSE."

MUSCULAR SYSTEM.

THE muscular system forms the most interesting and important part of the human body. It covers the bones, gives motion to every part, and completes the rotundity of form so agreeable to the eye of the observer. The principal use, however, of the muscles is to enable the animal to move from place to place, and to impart to every organ the motion necessary to support all the functions of animal life. They are distinguished from the other parts of the body by their peculiar texture, and by their singular vital property of contraction. They are of various shapes:—some hollow, as the heart, others flat, as the muscles of the breast and abdomen, and others long, as the flexors and extensors of the extremities.

The muscular is the only fibrous tissue of the body. These fibres contract and expand, and may be said to be the active agents in contradistinction to the bones, tendons, and ligaments, which are entirely passive, and under the control of the muscles. The muscular fibres are bound into bundles by cellular tissue, and these again are connected by the same substance until the form of the muscle is complete. Every muscle appears to be exactly adapted to the precise purpose for which it was designed, and not a single fibre can anywhere be detected without its appropriate use. The muscles gradually become thinner and smaller towards their extremities, the fibres diminishing in numbers, until they terminate in the cellular membrane by which they are enveloped. This in turn is condensed into a strong tendon or cord, and attached to the bones already described. This tendon is connected to every fibre, so that when they all contract, the muscle is shortened, and their power is concentrated upon a single tendon, and consequently there must necessarily be more or less motion in the levers or bones to which they are attached. The tendons, however, are not made up of the muscular fibre; but, as already stated, of the condensed cellular sheath by which every fibre is surrounded.

Every muscle is supplied with arteries, veins, lymphatics, and nerves, without which, there could neither be continued vitality nor regularity of motion. It is probable that without a nervous system there might be more or less contraction of the muscular fibre, upon the application of stimuli, but if so, the movements would be spasmodic, and without that control of the will which renders them available in the animal economy.

The muscles accomplish very different purposes. They move the fluids through the intestine and hollow tubes; they enlarge and contract the thorax so as to keep up the important process of respiration, and they are the active agents in all our locomotive exercises. There are about four hundred and fifty in number in the human body, mostly in pairs, and performing their various functions, independent of each other. Indeed, every muscle, composed as it is of innumerable fibres, united together by a cellular web or tissue, is a distinct organ, and subject to its own peculiar vital stimulus. They perform their office by means of a peculiar contractible power residing in the muscular fibre. This power of contraction is one of the most curious of all the animal functions. It has been the subject of much examination among anatomists and physiologists, but every attempt to explain it has only enveloped it in greater mystery. We know it exists, but of its precise nature we know as lit-

tle as we do of that of gravitation or magnetic attraction. It was implanted in the muscular tissue by the wise Creator for the wisest of purposes, and although we may study the laws regulating it, we must forever remain ignorant of its essence.

Muscles are divided into two classes :—voluntary, or those under the influence of the will, as the muscles of the face, neck and extremities ; and involuntary, or those which continue to act independent of the will, as the heart, hollow viscera, &c. The former class act solely through the influence of the nervous system ; the latter in part through the same influence, together with the application of their peculiar stimulus. Indeed all the functions by which the system lives are very correctly removed from under the influence of the will. We cannot arrest, when we choose, the action of the heart, stomach, bowels, and even the muscles of respiration, except for only a moment, without some violence that entirely destroys animal life. Of the other class, however, we have almost the entire control. We move from place to place, wherever we will, and we perform the most rapid and complicated movements of the fingers, hands, and indeed of all the extremities, with a dexterity surprising to the observer. Of these movements we have astonishing examples in musicians, dancers, and many of the mechanical pursuits.

But if the stimuli, by which this peculiar muscular contractility is called into action, be either deficient or excessive, the healthy condition of the muscles is impaired. Poisons derange or destroy the functions of the stomach ; irritating medicines increase the motions of the alimentary canal, and fear operates so powerfully on the muscles of volition, that the individual is sometimes carried, almost without consciousness, off the field of battle, by the muscles of his legs. This violent stimulus, however, injures the muscular tissue. A paroxysm of fever, or even a fit of drunkenness weakens the action of the heart ; poisonous articles, or even a debauch impairs the appetite ; excessive muscular exercise reduces the strength of the limbs, and continued excess ruins the entire system.

But in order to understand the action of the muscular system, we must turn our attention to another set of agents which has thus far passed unnoticed, but which are equally necessary in our vital movements. This is the nervous system ; which embraces the brain, spinal marrow, nervous cords, and organs of sense. The nerves pass off from the brain and spinal marrow, and are eventually distributed to the parts of the body endowed with feeling or motion. Many of their terminating branches are spent upon the muscles, and, with the capillary arteries and veins, are so perfectly united with them, that they cannot be distinguished from the muscular fibre. It is to this system that the muscles are indebted for the stimuli which causes them to contract, and, consequently, to put the animal machine in motion. Thus, there are, in the body, two living powers, which are the cause and effect in its movements. The nerves are intermediate between the brain and the muscles, and one cannot act without the other. The former conveys the commands of the will to the latter, so that the nerves are the regulators, while the muscles are the active agents of the system.

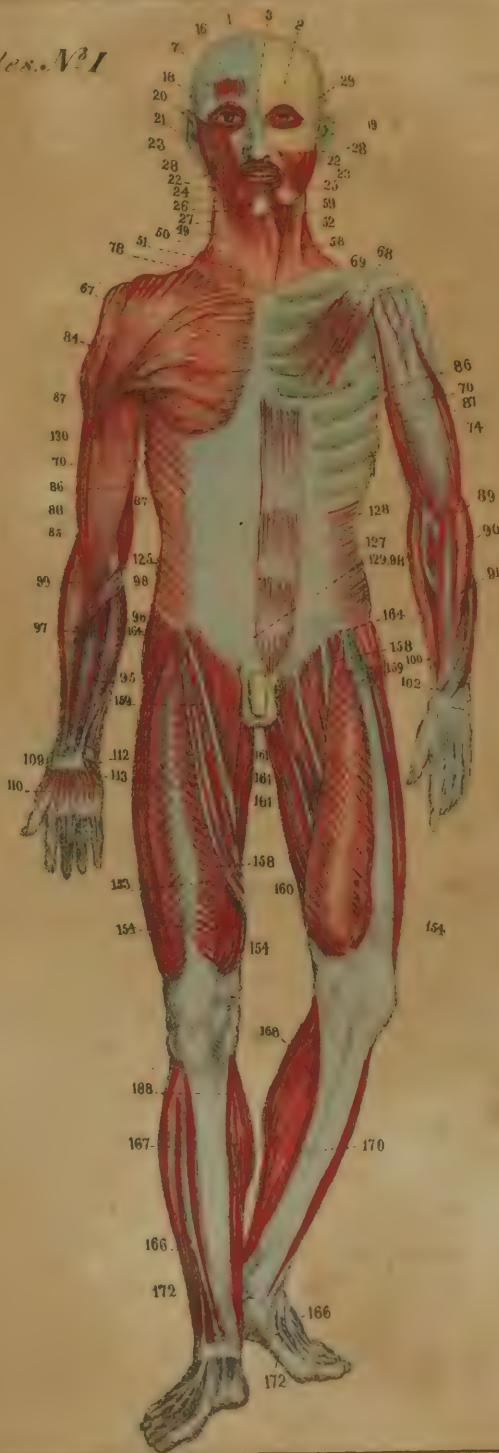
But the nerves, like the muscles, are not all of the same kind. Some are for feeling, others for motion, and others for sensation. The nerves of motion are called voluntary nerves, and control the same class of muscles, by conveying a stimulus to them, which causes them to contract. They are also sensible of the degree of activity assumed by the muscle, so

MUSCLES.—PLATE I.

Names of the muscles as numbered and represented in the plate, according to their uses and functions,

1. Tensor of the forehead when the occipital muscular planes contract ; perpendicular wrinkler of the skin of the forehead, when the anterior muscular planes contract.
2. Adductor of the eyebrows, and transverse wrinkler of the forehead.
3. Depressor of the skin of the forehead.
7. Constrictor of the eyelids.
16. Common elevator of the upper lip and wings of the nose.
18. Proper elevator of the upper lip.
19. Elevator of the corners of the lips.
20. Lateral elevator of the corners of the lips.
21. Elevator of the commissure of the lips, which it draws backwards and outwards.
22. Buccinator, or transverse muscle of the face, draws the lips backwards and extends the commissures.
23. Constrictor of the lips, or sphincter of the mouth.
24. Depressor of the angle of the lips.
25. Depressor of the lower lip.
26. Elevator of the skin of the chin and lower lip.
27. Lateral depressor of the lower lip, and corrugator of the skin of the neck.
28. Elevator of the lower jaw, or masticator.
29. Elevator of the angle of the lower jaw.
49. Depressor of the os hyoides and elevator of the thyroid cartilage.
50. Depressor of the thyroid cartilage.
51. Depressor of the os hyoides.
52. Depressor of the post-motor of the os hyoides.
58. Lateral depressor of the neck, and elevator of the first two ribs.
59. Depressor and rotator of the head forwards.
67. Great ante-pectoral—adducts the arm and dilates the thorax, (a muscle of inspiration and motion.)
68. Præ-motor of the shoulder, and elevator of the first five ribs (a muscle of inspiration.)
69. Elevator of the first rib, and præ-motor of the clavicle, (a muscle of inspiration.)
70. Præ-motor of the scapula, and approximates the ribs to each other, (a muscle of inspiration.)
74. Approximates the ribs to each other and dilates the thorax, (a muscle of inspiration.)
78. Elevator & adductor of the scapula, post-motor of the head & neck towards the scapula.
84. Elevator of the arm, and ante-motor, or post-motor, according as its fibres, anterior or posterior, act.
85. Extends the fore-arm on the arm, or the arm on the fore-arm, and abducts the scapula.
86. Flexor of the fore-arm on the arm, or of the arm on the fore-arm ; supinates the fore-arm slightly ; elevates the arm slightly, and lowers the shoulder.
87. Adductor and præ-motor of the arm.
88. Flexor of the fore-arm on the arm, or of the arm on the fore-arm.
89. Supinator or rotator of the fore-arm outwards, & slightly flexes the fore-arm on the arm.
90. Extensor of the hand, which it inclines towards the radius.
91. Common extensor of the fingers.
95. Flexor of the hand, and bends in towards the ulna.
96. Tensor of the palmar aponeurosis.
97. Flexor of the hand towards the radius.
98. Pronator, or rotator of the fore-arm inwards.
99. Extensor of the hand, which it bends towards the radius.
100. Flexor of the second phalanges of the fingers.
102. Extends the thumb and bends it towards the radius.
109. First thenar—bends the thumb towards the radius.
110. Second thenar—rotates the thumb towards the palm.
112. Cutaneous palmar muscle—puckers the integuments.
113. First hypothenar—bends the little finger towards the ulna.
125. Flexor of the thorax on the pelvis, which it bends to its own side, and rotator of the trunk forwards, (muscle of expiration.)
127. Tensor of the præ-lumbar aponeurosis, or lateral compressor of the viscera, (muscle of expiration.)
128. Depresses the thorax and compresses the viscera, (muscle of expiration.)
129. Compresses, lowers, and extends the linea alba, (muscle of expiration.)
130. Post-motor, adductor, and depressor of the arm, which it rotates inwards.
153. Extensor of the leg and flexor of the thigh.
154. Extensor of the leg.
158. Flexor of the leg & thigh on the pelvis, rotates the thigh & powerfully adducts the leg.
159. Adductor, flexor and rotator inwards of the thigh.
160. Flexes and adducts the leg.
161. Adductor of the thigh.
164. Abductor and tensor of the aponeurosis, called fascia lata.
166. Common extensor of the toes and flexor of the foot.
167. Extends the foot and elevates its outer edge.
168. Extensor of the foot and flexor of the leg.
170. Extensor of the foot.
172. Extends the great toe and flexes the foot.

Muscles. N^o 1



Muscles. N^o II



MUSCLES.—PLATE II.

- 1 Tensor of the forehead, when the occipital muscular planes contract; perpendicular wrinkler of the skin of the forehead, when the anterior muscular planes contract.
- 59 Depressor and rotator of the head forwards.
- 60 Great posterior rectus muscle of the neck—inclines the head backwards and slightly rotates it.
- 64 Splenius—extends the head, or inclines it backwards and a little to its own side.
- 72 Lowers the last four ribs, (muscle of inspiration.)
- 73 Approximates the ribs to each other and dilates the thorax, (muscle of inspiration.)
- 76 Post-motor of the head, elevator and adductor of the scapula, elevator of the trunk towards the shoulders.
- 77 Adductor of the scapula towards the vertebral column, and upwards.
- 78 Elevator and adductor of the scapula, post-motor of the head and neck towards the scapula.
- 79 Elevator and post-motor of the head of the humerus, abductor of the scapula.
- 80 Post-motor and rotator of the arm towards the scapula, which it abducts.
- 81 Post-motor depressor, and rotator of the head of the humerus, and abductor of the scapula.
- 82 Adductor, depressor and post-motor of the arm, which it rotates inwards; abductor and elevator of the scapula.
- 85 Extends the fore-arm on the arm, or the arm on the fore-arm, and abducts the scapula.
- 89 Supinator or rotator of the fore-arm outwards, and slightly flexes the fore-arm on the arm.
- 90 Extensor of the hand, which it inclines towards the radius.
- 91 Common extensor of the fingers.
- 92 Proper extensor of the little finger.
- 93 Extensor of the hand, which it inclines towards the ulna.
- 94 Elevator and supinator of the fore-arm.
- 95 Flexor of the hand, and bends in towards the ulna.
- 100 Flexor of the second phalanges of the fingers.
- 101 Flexor of the second phalanx of the thumb.
- 109 First thenar—bends the thumb towards the radius.
- 110 Second thenar—rotates the thumb towards the palm.
- 113 First hypothenar—bends the little finger towards the ulna.
- 126 Flexor of the thorax on the pelvis, which it bends to its own side, and rotator of the trunk backwards, (muscle of expiration.)
- 130 Post-motor, adductor, and depressor of the arm, which it rotates inwards.
- 131 Long muscle of the vertebræ—straightens the trunk and bends the thorax backwards towards the pelvis.
- 144 Extensor or post-motor of the thigh, which it rotates outwards.
- 145 Abductor, and slightly a rotator of the thigh outwards.
- 146 The same.
- 150 Rotator of the thigh outwards.
- 151 The same.
- 152 The same.
- 154 Extensor of the leg.
- 155 Post-motors and rotators of the thigh inwards, and flexors of the leg.
- 156 The same.
- 157 Post-motor of the thigh, flexor and rotator of the leg outwards.
- 160 Flexes and adducts the leg.
- 163 Adductor of the thigh.
- 168 Extensor of the foot and flexor of the leg.
- 169 Flexes the leg and rotates it inwards.
- 170 Extensor of the foot.
- 171 Extensor of the foot and flexor of the leg.
- 173 Extends the foot and raises its outer edge.
- 174 Flexor of the foot, which it inclines outwards.



that there is a kind of universal sense spread over the entire body. It is by this property that we are enabled to balance the body in standing, walking or running ; and adjusting the muscular action and the tension of the limb to the gravitation of the body in all its positions. The child acquires this sense with difficulty, and disease, extreme age, sleep and inebriation destroy it. It is most apparent in the skilful rope-dancer or equestrian performer.

At first view it would seem to be a defect in the animal body, that the origin and insertion of the muscles are not such as to favor their mechanical powers. It is true there are certain cases where the length of the lever gives an increase of power. Some of the processes about the bones of the head, the spines of the different vertebræ, the large process of the elbow, the trochanters of the thigh-bones, the heel-bones, and perhaps a few others, are examples of this ; but in most instances the muscle is fixed between the joint and the weight that is to be moved. There is therefore a great loss of power in all such cases, but especially when the muscle is inserted near the joint. The following diagram will illustrate this position :—



Here the muscle D, which bends the fore-arm, is inserted into the radius E so near the fulcrum or centre of motion in the elbow-joint, and so obliquely, that it must raise the hand and fore-arm with disadvantage. This apparent defect, however, ceases to be such when we consider that motion seems here to be the principal object of this construction. The contractile power of the muscle is also so great, that the lever can very well be dispensed with. Indeed mechanical power is everywhere sacrificed in the human body to the form and the fitness of parts, that the joints may be smaller than the limbs ; that the limbs may be proportioned to the body, and that beauty, convenience, and velocity of movement, may be everywhere apparent, though gained at the expense of that power which is not needed in the system, since the wisdom and goodness of the Creator has appointed a degree of force in the muscles more than proportioned to the necessary loss. Those who will admire the ways of Providence, should know how to do so. Nature does not seek to compensate for the want of power, by the addition of pulleys, levers, and mechanical helps ; nor is it in the form of the parts that the infinite wisdom is to be found. It is chiefly apparent in the *living* power by which the whole system is moved and governed. A simple muscle, easily torn asunder after death, is not only endowed with the power of contraction, so as to enable it to remove the greatest weights by its regular action, but in spasmodic and violent exercise it often breaks the very bones to which it is attached.

After this brief notice of muscular action, we will proceed to notice more especially their physical organization, and their relative connection with the surrounding parts.

In the animal body there is a perfect relation preserved between the parts of the same organ. The muscular fibre or fleshy parts, form what is termed the belly of the muscle, and the tendon, attached to the bones, the cord by which it pulls. The size of the muscle is an evidence of the power of the animal, and the condition of the tendon indicates the state of the muscle. Thus, jockeys are at no loss to determine the power of a horse when they can examine his tendons or sinews. If they are large and well developed, it is certain that the muscles are so also, for the two parts bear an exact relation to each other. The most approved form in the leg of a fleet hunter or hackney is that in which three convexities can be distinguished: the bone, the prominence of the elastic ligament behind the bone, and the strong round flexor tendons immediately in the rear of the ligament. It may be well to observe in this place, that the ligaments and tendons are by no means the same. Ligaments bind the bones together, and are most abundant at the joints, while tendons are the termination of the muscles, and serve to move the bones on each other.

Exercise increases the size and strength of the muscular system. The arm of the blacksmith, the legs of dancers, and the athletic frame of the hardy laborer, are sufficient proof of this fact. In order also that the muscular system should be perfectly developed, the limbs and body should be free from the restraint of bandages, corsets, tight shoes, &c. The Irish laborer walks with dignity, even when his limbs are exposed for the want of covering, while the English peasant, whose foot and ankle are confined in a laced shoe with a wooden sole, appears to move with pain and difficulty, in consequence of the imperfect play of the ankle-joint, foot and toes. The muscles too, which move these parts, are so imperfectly formed, in consequence of the want of exercise, that his legs are small and shapeless.

It has already been stated that the muscles are mostly arranged in pairs, and that they act in conjunction with each other. But this is not all, for every muscle is provided with an adversary. In the language of Paley "they act like two sawyers in a pit, by an opposite pull; the nature of the muscular fibre being what it is, the purposes of the animal could be answered by no other. And not only the capacity for motion, but the aspect and symmetry of the body is preserved by the muscles being thus marshalled according to this order. The mouth is holden in the middle of the face, and its angles kept in a state of exact correspondence, by several muscles drawing against, and balancing each other." If the nerves of one set be destroyed and the parts palsied, their opponents gain the ascendancy, and the mouth is drawn to one side.

In order to show the number and variety of muscles necessary for carrying on the movements of a portion of a single limb, the annexed drawing represents a few of those situated on the front portion of the fore-arm.

The muscle *a*, is called by anatomists *Pronator Teres*. It is a short muscle, and is used to turn the hand and arm inwards as well as to assist in bending the arm at the elbow-joint.

The next is marked *b*, and is called by anatomists *Flexor Carpi Radialis*, a name indicating its use. It originates near the latter and is inserted into the bone of the hand, which sustains the forefinger. Its

Fig. 1.



Fig 2.



- a. Brachial artery.
- b. Superior muscular branch.
- c. Inferior muscular artery.
- d. Great anastomosing artery.
- f. Small branches of the brachial artery.
- g. Superficial palmar arch.

Fig. 3



- a. Brachial artery.
- n. o. Radial artery.
- l. Ulnar Artery.
- m. Interosceus artery.
- p. Deep palmar artery.

principal use is to bend the wrist, turning it a little inwards, but it also bends the fore-arm at the elbow.

The next muscle in the cut is called *Palmaris Longus*, and is marked *c, d*. As its name indicates, it is a very long and slender muscle, and often wanting. It arises in common with the two latter, and is fixed, by a broad tendinous ligament, into the roots of all the fingers. Its principal use is to bind down the muscles of the palms, and by its broad and dense ligament to protect the blood-vessels and nerves in their course to the fingers.

The muscle *e* can scarcely be seen in the figure. It is called *Flexor Carpi Ulnaris*, and is situated on the inside of the preceding muscles. It arises from the upper part of the fore-arm, and is principally inserted into one of the small bones of the wrist. Its use is to bend the wrist.

The last muscle we shall mention in this place is called *Supinator Radii Longus*. It is marked *g*. It arises from above the elbow, on the opposite side from those already enumerated, and is inserted into the lower end of one of the bones of the fore-arm. It turns the palm of the hand upwards, as when we present it to take a handful of anything.

These form but a small part of the muscles of the arm, hand and fingers, and we have only referred to them by name and location, in order to give the reader some idea of the variety concerned in the motions of a single limb. We have only mentioned the names of five, while there are thirty situated below the elbow-joint; every one performing its own office, and indispensably necessary in the rotations, flexions, and extensions of the arm, hand and fingers. The dexterity with which they perform their duty may be seen in the motions of the fingers of musical performers; and perhaps nothing more strongly attests the wisdom and goodness of a Supreme Being, than the formation of the human arm and hand.

We have added the annexed figure of the arteries of the arm, that our readers may have some idea of the manner in which they are distributed throughout the muscular system. It is from this set of vessels that danger arises from profuse bleeding when the larger ones are divided. From this cut, the artizan or mechanic may readily perceive how the bleeding may be arrested after a severe cut upon the wrist, hand or arm. All that is necessary is to tie a tight bandage around the arm, above the elbow. This will arrest the bleeding until a surgeon is called to tie the divided artery, and if properly done, may frequently be the means of saving a valuable life.

From the brief notice we have necessarily taken of the muscular system, it is evident that the study of the animal body and the laws by which it is governed, are full of interest. Everywhere there is evidence of wisdom, power, and skill, beyond the comprehension of man. The smallest fibre or the most minute vessel or nerve performs its appropriate duty without interfering with its associates, and when either is injured, the same power which enables it to act its part, immediately commences its repair. If one muscle is divided, the others perform its duty until it is again able to act its part. If a smaller vessel or a nerve is destroyed, the living power at once enlarges or furnishes others in its place, and thus the movements of the animal machine continues until the entire man has performed the part for which he was called into being, and the wheels of weary life stand still.

But we must close this interesting subject. Our limits will not allow

us to continue it. We will, however, refer to the number of muscles necessary for the performance of the various movements of the principal parts of the body. They are mostly arranged in pairs, and their names correspond, in some instances, with their shape, in others, with their location, and in others, with their office.

There are sixty-four distinct muscles of the head, tongue and throat. Most of these have correspondent ones on the opposite side, so that there are really about one hundred and twenty in all. The motions of the arm and hand are carried on by fifty-two on each side. The mechanism of respiration requires about the same number, while there are for other purposes about thirty pairs placed upon the neck, trunk and abdomen. The lower extremities require about fifty pairs to perform the various motions necessary in walking, running, dancing, &c. Nearly all the muscles of both extremities, as well as many of those on the trunk, neck, and head, are entirely under the control of the will.

THE DIGESTIVE ORGANS.*

AMONG the different tribes of animals, there is an almost endless diversity in the formation of the alimentary organs; and as these organs vary, not only in their own formation, but also with respect to the auxiliary apparatus, and appendages of every kind connected with them, any detailed account of the alimentary system would, at present, be quite uncalled for. In general, the alimentary canal of the higher classes of animals, consists of a tube of greater or less elongation, expanded in some parts of its length; terminated at one extremity by a mouth, into which the food is received, and at the other, by a provision for the removal of excrementitious matters. In some of the less perfect animals, the alimentary canal has only one aperture; in these animals, of course, instead of a canal, there is a kind of sac. In a very few other animals, the alimentary cavity has numerous apertures. In all instances, however, and whatever may be the nature of the alimentary matters, these matters, after having been retained for some time in the organs appropriated to nutrition, are reduced, more or less, to a fluid state—are DIGESTED, in the common sense of the term, and are converted into what is denominated *chyme*. The more nutritious parts of the fluid chyme, or the *chyle*, as they are termed, are then absorbed, and distributed through the system for the reparation of the animal; while the insoluble and other matters, are separated as excrementitious.

There is an endless diversity observable in the form and arrangements of the alimentary canal, in the different kinds of animals. A few of the most remarkable of these diversities among the more perfect animals will be noticed, in the outline we are now to give of the alimentary canal as existing in the human body.

THE MOUTH AND ITS APPENDAGES.

“In no apparatus put together by art,” says Paley, “do I know such multifarious uses so aptly contrived as in the natural organization of the mouth.” “In this small cavity we have teeth of different shape,—first for cutting, secondly for grinding; muscles most artificially disposed for carrying on the compound motion of the lower jaw, half lateral and half vertical, by which the mill is worked; fountains of saliva springing up in different parts of the cavity, for the moistening of the food, while the mastication is going on; glands to feed the fountains; a muscular construction of a very peculiar kind in the back part of the cavity, for the guiding of the prepared aliment into its passage towards the stomach, and, in many cases, for carrying it along that passage.” “In the mean time, and within the same cavity, is going on another business altogether different from what is here described—that of respiration and of speech. In addition, therefore, to all that has been mentioned, we have a passage opened from this cavity to the lungs for the admission of air, exclusively of every other substance; we have muscles, some in the larynx, and without number in the tongue, for the purpose of modulating that air in its passage, with a variety, a compass, and a precision of which no other musical instrument is capable. And, lastly, we have a specific contri-

* For this chapter the editor is indebted to the works of Prout, Dunglison, and Beaumont.

vance for dividing the pneumatic part from the mechanical, and for preventing one set of actions interfering with the other." "The mouth, with all these intentions to serve, is a single cavity—is one machine, with its parts neither crowded nor confined, and each unembarrassed by the rest." Such is Paley's graphic description of the human mouth and its appendages: we have quoted it at length, that it may serve as a text for illustration.

Man has been observed to differ more from other animals in the form of his *lower jaw*, than in the form of any other bone of his body. This difference consists chiefly in the prominence of the chin, that peculiar characteristic of the human countenance, which distinguishes, more or less, every race of mankind, and is found in no other animal whatever. There is likewise a striking difference, among the various tribes of animals, in the mode of articulation of the lower jaw, which, in all cases, is singularly adapted to the nature of the food of the animal. Thus, in the carnivorous tribes the articulation is so arranged that the jaw can move only up and down, and is almost entirely incapable of that lateral movement, which is essential to genuine mastication. Hence, such animals cut and tear their food, and swallow it in large pieces. But those animals that live on vegetables, in addition to the vertical motion of their lower jaw, have the power of moving it backwards, forwards, or to either side, so as to produce a grinding effect, admirably fitted for triturating the vegetable matters on which they subsist.

The *teeth* next claim our attention, as being not less suited to the habits of the animal, than in the form of the jaw in which they are set. Teeth are divided by naturalists into three orders—the *incisors*, or *cutting teeth*, placed in the front part of the mouth; the *cuspidati canine*, or *corner teeth*, usually placed near the angles of the jaw; the *molars*, or *grinding teeth*, which always occupy the sides and back part of the jaw. In man, and in those animals which most nearly resemble him in their structure, teeth exist in all the above varieties of form. But many species want one or other of these varieties; while the teeth they possess are of a form and size very unlike the same teeth in man. Thus, in animals which live chiefly on the harder vegetable substances, and which, from this peculiar mode of feeding, have been termed *gnawing animals*, the *incisor* teeth are the most remarkably developed, as these teeth are the best adapted, and, indeed, are the most necessary, to their habits. In *carnivorous animals*, on the other hand, the *canine* teeth are of chief importance, as enabling these animals to seize and hold their prey: in such animals, accordingly, the canine teeth are the most perfectly formed. Lastly, the animals that feed on grass, and other *herbaceous* substances, and whose aliments require long and complete mastication, the *molars*, or grinding teeth, attain the greatest enlargement; and in many of these animals the incisor and canine teeth are entirely wanting. Besides the adaptation of the form, the enamel, or harder cutting portion of the teeth, is distributed over and throughout their texture, according to their intended uses, in a manner that is truly extraordinary.

The next auxiliary appendages of the mouth are the *glands* that secrete the saliva; in which we observe the same beautiful arrangement as in the form and structure of the teeth. In man, though the apparatus for the secretion of the saliva is by no means of large size, yet the quantity of fluid which the salivary glands are capable of secreting, and do secrete during mastication, is very considerable, often amounting, it is said, to

half a pint or more. By a beautiful arrangement, those animals that do not masticate their food, as the carnivorous tribes, have very small salivary glands; while in animals whose food requires long mastication, as in ruminating animals—the cow and the sheep, for example—the salivary glands are very large.

The passage by which the masticated food is conveyed from the mouth to the stomach is termed the *œsophagus*. Like the whole frame, the *œsophagus* is admirably adapted for its office; and in different animals varies in size and structure, according to their habits. These differences, however, scarcely concern us at present, and we pass on to that important organ—

THE STOMACH, AND ITS APPENDAGES.

The human stomach is a membranous bag, of a shape rather difficult to be described, so as to convey a clear notion of it to the reader. If we imagine two cones united at their bases, and the figure thus produced to be bent into a semicircular form, some idea may be obtained of the outline of the stomach in the human species. In respect to its size the hu-



[A, A, anterior surface of the stomach; B, enlargement at the lower part; D, cardiac orifice; E, commencement of the duodenum; F and C, coronary vessels; H, omentum or caul.]

man stomach varies: but in the adult, its capacity is usually such as to contain about two or three pints. The stomach is situated immediately under the diaphragm, but the precise place of the organ differs somewhat with its state of repletion. The general position of the stomach is transverse, or horizontal, supposing the body to be upright; the left orifice, or *cardia*, which communicates with the *œsophagus*, being somewhat higher

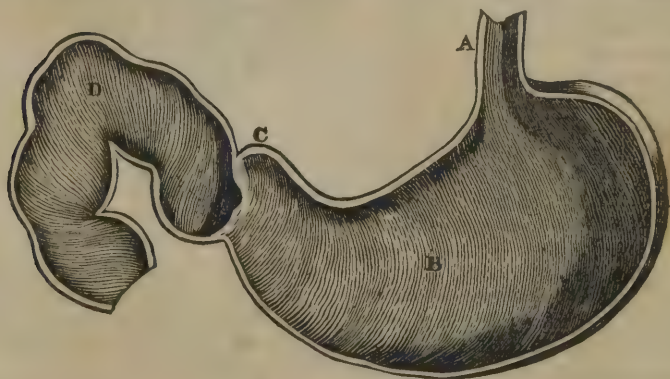
than the right orifice, the *pylorus*, through which the food is transmitted to the further portion of the alimentary canal. The upper space between the two orifices is usually termed the small curvature, the lower space, the great curvature, of the stomach. Numerous glands occupy the internal surface of the stomach, particularly near its pyloric orifice. By these glands a fluid is secreted of the highest importance in the digestive functions, on the nature of which we shall enlarge hereafter.

Such is the stomach of man; but the form and magnitude of this organ vary almost infinitely in different animals, according to the nature of their food and other circumstances. We can, at present, notice only two or three of the most remarkable diversities. In most carnivorous animals, the stomach bears a resemblance to that of man. There is also a resemblance, at least externally, in certain herbivorous animals; as in the horse, the rabbit, and others. The internal arrangements, however, are different; thus, in the animals above mentioned, the left or cardiac half of the stomach is lined with cuticle; while the other half, towards the pylorus, has the usual villous and secreting surface. Hence, these two portions of the stomach perform very different offices, and generally contain food in very different states of reduction. The most complicated and artificial arrangement, however, both with respect to the structure of the parts, and the lining membranes, is found in the well known four stomachs of the animals that ruminate, and have divided hoofs, as the cow and the sheep. We shall endeavor to give a general description of these four stomachs. The first stomach is denominated the *paunch*, and in the adult animal is by far the largest. The second stomach follows, and may be regarded as a globular appendage to the paunch; from which it is distinguished, principally, by the regular and beautiful distribution of its internal membrane into polygonal cells. The third stomach is the smallest of the four, and is the most remarkable in its structure: its capacity is much diminished by numerous and broad duplicatures of its internal membrane, which are placed lengthwise, and vary in breadth in a regular order. The fourth stomach is next in size to the paunch, and is lined with a villous membrane approaching to that of the human stomach, which this fourth stomach may be supposed to represent; the three preceding stomachs having been evidently intended to prepare the refractory food of the animal for the true digestive process, which it undergoes in this last stomach. Every one is acquainted with the fact, that animals furnished with the gastric arrangements above described, *ruminate*; that is to say, have the faculty of masticating a second time, and at their leisure, that food which had been hastily swallowed and deposited in their first stomach. The contrivance by which rumination is effected is very beautiful, and is connected with the peculiar arrangement already mentioned, of the four stomachs, with respect to the *œsophagus*: but as it would not be easy, in a few words, to give more than a general outline, we must refer the reader to anatomical works for a more particular description of the stomachs of ruminating animals. The only other modification of the stomach which we shall notice, is that which exists in some birds; as, for example, in the common fowl. The common domestic fowl, as well as many similar birds, has a sort of preliminary stomach termed the *crop*, formed by an expansion of the *œsophagus*. In the crop, the hard seeds, and other compact substances which birds devour, are macerated and softened, and perhaps undergo further changes, before they enter the proper stomach, to be next considered. The proper stomach, or *gizzard*, of birds, is a hollow mus-

cle of great strength, lined with a thick and firm epidermis, disposed in rugæ, and admirably adapted for triturating the hard matters that constitute their food. The small stones which these birds constantly swallow seem also to promote this trituration.

We have given the above short sketch of the structure of the stomachs of animals, not only that we might impart to the general reader a faint conception of the extraordinary design manifested in that structure, but to enable us to show the object of diversity of structure, when we come to speak of the function of digestion a little more in detail.

After the stomach, we proceed to the consideration of the *intestinal canal*. In man, and in the more perfect animals, this canal assumes two well marked forms, usually termed, from their relative size, the small and the large intestines. In most animals resembling man, the small intestines are the longest, and their internal surface is villous. The coats of the large intestines are thicker, and the membrane with which they are lined is very rarely villous. The first portion of the small intestines,



[A, the œsophagus or gullet ; B, the stomach ; C, the pylorus ; D, the duodenum.]

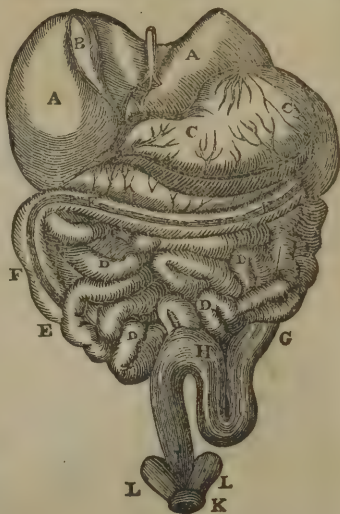
from its supposed length, termed the *duodenum*, or twelve inch intestine, begins from the pyloric orifice of the stomach ; and, in many animals, has a course not easy to be described, so as to be intelligible to the general reader. The duodenum terminates in the second portion of the small intestines, called the *jejunum*, from its being usually empty. The duodenum differs from the stomach and other parts of the canal, in being secured in its position by various attachments ; while the stomach and other parts of the canal are comparatively loose and floating. This fixedness appears to serve many wise purposes, on which we cannot dwell here ; but one purpose probably is, to ensure the easy and regular passage of the bile and the pancreatic fluids into this part of the canal. As the organs producing these important fluids are fixed, the conducting tubes necessarily require also to be connected with a fixed organ ; otherwise the passage of the fluids from the secreting organs to the intestine, would be constantly liable to interruption. The duodenum is very highly organized, and its functions are probably not less important than even those of the stomach. The remainder of the small intestines is divided into the *jejunum*, already mentioned, and the *ilium* ; but the precise place where one ends, and the other begins, is scarcely definable ; nor are the differ-

ences of structure between the two so obvious as to require to be noticed in this place.

The large intestines exceed the small intestines in diameter, but are considerably shorter: their form and structure are also different. The first division of this portion of the alimentary canal is termed the *cæcum*; and, in man at least, may be considered as little more than the head or commencement of the next division of the large intestines termed the *colon*. The colon is of much greater diameter than any other part of the intestinal canal, and constitutes almost the entire length of the large intestines. The colon begins low down on the right side of the abdomen, then, ascending to the level of the stomach, passes across to the left side, immediately below that organ. On the left side, the colon descends again, and at the same time forms what is called the *sigmoid flexure*. The colon and the alimentary canal at length terminate in what is named the *rectum*. The texture of the colon is much thicker than that of any other portion of the canal. Its organization also is peculiar; and, like the whole arrangement wonderfully adapted for the purposes which this portion of the canal is supposed to serve in the animal economy.

Such is the short account of the alimentary canal in man. We shall now state some of the more remarkable diversities that are observed in the lower animals.

One of the most striking circumstances relative to the alimentary canal in animals, is its various lengths in the different classes. In man, and other omnivorous animals, the proportion is intermediate between that of carnivorous animals on the one hand, and herbivorous animals on the other. In man the whole length of the canal is about six or seven times that of the body; while in carnivorous animals it is only from about three to five times that length; and in graminivorous animals, as in the sheep, the length of the canal is twenty-seven times that of the body. In other herbivorous animals, the length of the canal varies from twelve to sixteen times that of the body. In most birds the alimentary canal is much shorter than in quadrupeds; the length, in general, being between twice and five times that of their bodies: while in many reptiles and fish, the length of the canal scarcely exceeds that of the body: in some fish it is even less; as, for example, in the shark. There are animals that feed on vegetables, the length of whose alimentary canal is not so great as in the instance above stated, the deficiency in length being apparently made up in breadth. Thus, in the horse, the stomach is simple, and not much



[A, A, the liver; B, the gall bladder; C, C, the stomach; D, D, D, D, the small intestines; E, commencement of the large intestines; F, F, F, the colon; G, H, sigmoid flexure of the colon; I, I, rectum; K, anus, with the sphincter ani; L, L, muscles.]

developed, when compared with the size of the animal; nor are the intestines very remarkable for their length, but the cæcum and the large intestines are enormously expanded in diameter. The cæcum of the horse seems to perform many of the offices of a second stomach, and is of fully equal capacity. There are in animals many other beautiful arrangements of the digestive organs, which we shall pass without further notice; as our desire is to inform the reader of the general connection and adaptation which exists between the structure of animals and the food on which they live. It remains to conclude this outline of the digestive organs, with a few remarks on those invariable accompaniments of the alimentary canal,—the *liver*, the *pancreas*, and the *spleen*.

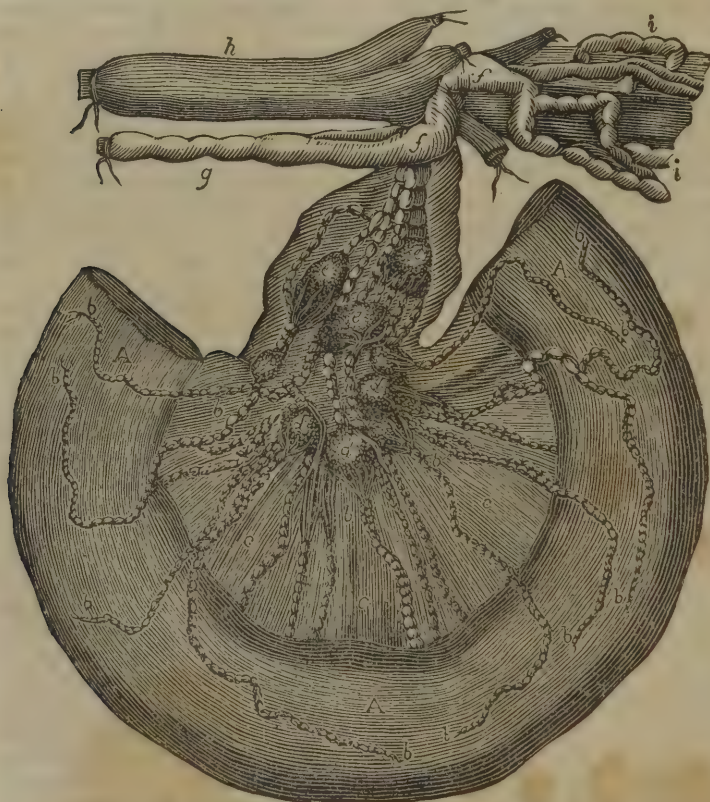
The liver is the largest glandular apparatus in the body, and one of its important offices is to secrete the *bile*, which secretion, as before observed, enters the intestines near the commencement of the duodenum. The general situation of the human liver is in the upper part of the abdomen, under the ribs on the right side, from whence it extends, more or less, to the region of the stomach, and, in some instances, even to the left side. The appearance and form of the liver are too well known to require description here, while to those who are unacquainted with these particulars, they cannot be adequately made known by words. In man, and the greater number of animals, the bile is collected in a small bag, termed, from its office, the *gall-bladder*. The animals wanting a gall-bladder are chiefly vegetable feeders; as the horse and the goat among quadrupeds, the pigeon and the parrot among birds. On the contrary, most amphibia have a gall-bladder; but it exists in a few animals lower in the zoological scale. The liver assumes a variety of forms in different animals. In many, and particularly in carnivorous animals, the liver is more divided than in man: while in ruminating animals, also in the horse, the hog, and others, its divisions are not more numerous than in man. The liver of birds consists of two lobes of equal size.

The *pancreas*, or *sweet bread*, is a large gland, which, in the human body, lies across the upper and back part of the abdomen, behind the stomach, and between the liver and the spleen. The pancreas is composed of numerous small glands, whose ducts unite and form the pancreatic duct. In man the pancreatic duct joins the gall duct at its entrance into the duodenum, and thus, the peculiar secretion of the pancreas is poured into that intestine, commingled with the bile. In animals the pancreas, like the liver, is much varied in its form; and its duct, instead of entering with the biliary duct, often joins the intestinal canal separately, as in the hare and others. In fishes the pancreas is wanting, but what are termed the cæcal appendages, are supposed to have a similar office. The nature of the pancreatic fluid will be considered presently.

The *spleen*, in man, is situated in the upper and left side of the abdomen. Its shape is oblong, and its color a deep mulberry, more nearly resembling that of the liver than of any other organ. The spleen has no excretory duct, and its use is very little understood. Among the less perfect animals, the spleen is much smaller than in those whose structure resembles that of man: and where there is more than one stomach the spleen is always attached to the first. The situation, also, of the spleen varies in the less perfect animals; thus, in the frog it is fixed in the mesentery.

When the food that has undergone the first process of digestion in the stomach, quits that organ and enters the duodenum, some other changes of a very remarkable kind take place. If the food originally contained

no albuminous matter, no albumen is developed in the stomach, but immediately on the entrance of the semi-fluid mass into the duodenum, and its mixture with the bile and pancreatic fluids, albuminous, and other chylous matters become distinctly perceptible. At the same instant, those fluid parts, which in the stomach were acid, are so far altered, by the addition of the bile and the pancreatic fluids, as to become neutral, or almost neutral; some gas is frequently extricated, and that portion of the food which is destined to be excrementitious, is evidently separated. The albumen which is thus found to exist in the *chyme*, (as the food is termed after it has been acted on by the stomach and has entered the duodenum) may be partly derived from the pancreatic fluid, which, as we have already mentioned, has been said to contain albumen. But the quantity of albumen and of other proximate principles of the chyle that are found in the contents of the duodenum, at some distance onward from the pylorus, is much too great to be explained in this manner. Indeed the properties, as well as the quantity, of the albuminous matters show, beyond a doubt, that the albuminous matters are developed from the food, and constitute the chyle, which is subsequently taken up by the lacteals.



[A, A, A, a portion of the jejunum; b, b, b, b, superficial lacteals; c, c, c, mesentery; d, d, d, first row of mesenteric glands; e, e, e, second row; f, f, receptaculum chyli; g, thoracic duct; h, aorta; i, i, lymphatics.]

Compared with the functions of the stomach and duodenum, the functions of the succeeding portions of the alimentary canal, as far as we can judge, are unimportant. The digested mass passes from the duodenum into the jejunum and ilium; though before the food reaches the end of the ilium, the whole of the chyle contained in it has been absorbed into the apertures of the numerous tubes named *lacteals*.

The *chyliferous vessels*, or *lacteals*, arise from the inner surface of the small intestine, in the villi, which are at the surface of, and between the *valvulæ conniventes*. Their origin is, however, imperceptible, even by the aid of the microscope; and, accordingly, the nature of their arrangement has given occasion to much diversity of sentiment among anatomists. When they become perceptible to the eye they are observed communicating frequently with each other, and forming a minute network, first between the muscular and mucous membranes, and afterwards between the muscular and peritoneal, until they terminate in larger trunks. When they attain the point at which the peritoneal coat quits the intestine, they leave it also, and creep for an inch or two in the substance of the mesentery, when they enter a first row of mesenteric glands. From these they issue, of a greater size and in less number, proceed still further along the mesentery and reach a second row, into which they likewise enter. From these, again, they issue, larger and less numerous, anastomosing with others, and proceeding towards the lumbar portion of the spine, where they terminate in a common reservoir,—the *receptaculum chyli*,—which is the commencement of the thoracic duct. This reservoir is situated about the third lumbar vertebra, behind the right pillar of the diaphragm and the right renal vessels. The chyliferous vessels generally follow the course of the arteries, but sometimes proceed in the spaces between them. They exist in the lower part of the duodenum, through the whole of the jejunum, and in the upper part of the ilium.

These tubes open, in greater or less number, into the whole interior surface of the three portions of the alimentary canal, along which the food is moved from the stomach to the colon. From the ilium the undigested or excrementitious matters proceed into the cæcum; in which cavity, in some animals, as, for example, in the horse, even these excrementitious matters appear to undergo a second digestion; but in all animals the contents of the cæcum have a very different aspect from those of any part of the alimentary canal nearer to the stomach. The mass of excrementitious matters continue their course from the cæcum into the colon, where they are still further changed. The nature of these changes, however, is not well understood, though they are probably of no small importance in the animal economy. Finally, all the nutritious portions of the food having entered into the system of the animal, nothing remains but what is entirely excrementitious."

CHYMIFICATION is effected in the stomach.* It is the first stage proper

* From "*Experiments and Observations on the Gastric Juice, and the Physiology of Digestion*, by WM. BEAUMONT, M. D., Surgeon in the United States Army."

Whilst stationed at Michillimackinac, Michigan Territory, in 1822, in the military service of the United States, the following case of surgery came under my care and treatment.

ALEXIS ST. MARTIN, who is the subject of these experiments, was a Canadian, of French descent, at the above mentioned time about sixteen years of age, of good constitution, robust and healthy. He had been engaged in the service of the American Fur Company, as a voyageur, and was accidentally wounded by the discharge of a musket on the 6th of June, 1822.

of the conversion of aliment into blood; though, in the ordinary course of proceeding, as animals are constituted, some previous steps are necessary. After the aliment has been received into the stomach it is subjected to certain evolutions, or motions, propagated by the muscular fibres of that organ; and is acted upon through the agency of some principle, which changes it from the heterogeneous mixture of the various kinds of diet, submitted to its action, to an uniform homogeneous semi-fluid, possessing properties distinct from the elements of which it was composed. The length of time consumed in the operation is various. It depends upon the quantity or quality of the ingestæ, the healthy or diseased state of the stomach, &c. In the various experiments which I have made, the medium time may be calculated at about three and a half hours.

It has been suggested by many physiologists, and positively asserted by some, that there is considerable increase of the temperature of the stomach during the digestion of a meal. But from the result of a great number of experiments and examinations, made with a view of ascertaining the truth of this opinion, in the empty and full state of the organ, and

The charge, consisting of powder and duck shot, was received in the left side of the zonth, he being at the distance of not more than one yard from the muzzle of the gun. The contents entered posteriorly and in an oblique direction, forward and inward, literally blowing off integuments and muscles of the size of a man's hand, fracturing and carrying away the anterior half of the sixth rib, fracturing the fifth, lacerating the lower portion of the left lobe of the lungs, the diaphragm, and *perforating the stomach*.

Cicatrization and contraction of the external wound commenced on the fifth week; the stomach became more firmly attached to the pleura and intercostals by its external coats, but showed not the least disposition to close its orifice; this (the orifice) terminated as if by a natural boundary, and left the perforation resembling, in all but a sphincter, the natural anus, with a slight prolapsus.

To retain his food and drinks, I kept a compress and tent of lint, fitted to the shape and size of the perforation, and confined there by adhesive straps.

After trying all the means in my power for eight or ten months to close the orifice, by exciting adhesive inflammation in the lips of the wound, without the least appearance of success, I gave it up as impracticable in any other way than that of incising and bringing them together by sutures, an operation to which the patient would not submit.

By the 6th of June, 1823, one year from the time of the accident, the injured parts were all sound and firmly cicatrized, with the exception of the aperture in the stomach and side. This continued much in the same situation as it was six weeks after the wound was received. The perforation was about two and a half inches in circumference, and the food and drinks constantly exuded, unless prevented by a tent, compress, and bandage.

From this time he continued gradually to improve in health and strength, and the newly formed integuments over the wound became firmer and firmer.

In the spring of 1824 he had perfectly recovered his natural health and strength: the aperture remained, and the surrounding wound was firmly cicatrized to its edges.

In the month of May, 1825, I commenced my first series of gastric experiments with him at Fort Mackinac, Michigan Territory. In the month of June following, I was ordered to Fort Niagara, New York, where, taking the man with me, I continued my experiments until August. Part of these experiments were published in 1826, in the 29th number of the Philadelphia "Medical Recorder," conducted by Dr. Samuel Calhoun. About this time (August, 1825) I took St. Martin with me to Burlington, Vermont, and from thence to Plattsburgh, New York. From the latter place he returned to Canada, his native place, without obtaining my consent.

Being unable to ascertain his place of resort, I gave him up as a lost subject for physiological experiments, and returned to my post at the west again. I did not, however, remit my efforts to obtain information of his place of residence and condition.

He remained in Canada four years, during which period he married, and became the father of two children, worked hard to support his family, and enjoyed robust health and strength. In 1825, as he has informed me, he engaged with the Hudson Bay Fur Company as a voyageur to the Indian country. He went out in 1827 and returned in 1828, and subsequently labored hard to support his family until 1829.

during different stages of chymification, I am convinced that there is no alteration of temperature, unless some other circumstance should produce it. Active exercise always elevates the temperature of the stomach, whether fasting or full, about one and a half degrees.

With respect to the agent of chymification, that principle of life which converts the crude aliment into chyme, and renders it fit for the action of the hepatic and pancreatic fluids, and final assimilation and conversion into the fluids, and the various tissues of the animal organism—no part of physiology has, perhaps, so much engaged the attention of mankind, and exercised the ingenuity of physiologists. It has been a fruitful source of theoretical speculation, from the father of medicine down to the present age. It would be a waste of time to attempt to refute the doctrines of the older writers on this subject. Suffice it to say, that the theories of *Concoction*, *Putrefaction*, *Trituration*, *Fermentation*, and *Maceration* have been prostrated in the dust before the lights of science and the deductions of experiment. It was reserved for SPALLANZANI to overthrow all these unfounded hypotheses, and to erect upon their ruins a

Accidentally learning about this time where he was, and that he enjoyed perfect health, I made arrangements with the American Fur Company, who annually visit Canada for the purpose of procuring voyageurs, to find and engage him for my service, if practicable. After considerable difficulty, and at great expense to me, they succeeded in engaging him, and transported him from Lower Canada, with his wife and two children, to me, at Fort Crawford, Prairie du Chien, Upper Mississippi, a distance of nearly two thousand miles, in August, 1829. His stomach and side were in a similar condition as when he left me in 1825. The aperture was open, and his health good.

He now entered my service, and I commenced another series of experiments on the stomach and gastric fluids, and continued them, interruptedly, until March, 1831. During this time, in the intervals of experimenting he performed all the duties of a common servant, chopping wood, carrying burthens, &c., with little or no suffering or inconvenience from his wound. He labored constantly, became the father of more children, and enjoyed as good health and as much vigor as men in general. He subsisted on crude food in abundant quantities, except when on prescribed diet for particular experimenting purposes, and under special observance.

In the spring of 1831, circumstances made it expedient for him to return with his family from Prairie du Chien to Lower Canada again. I relinquished his engagements to me, for the time, on a promise that he would return when required, and gave him an outfit for himself, wife, and children. They started in an open canoe, via. the Mississippi, passing by St. Louis, Missouri; ascended the Ohio river, then crossed the state of Ohio to the lakes, and descended the Erie, Ontario, and the river St. Lawrence, to Montreal, where they arrived in June. He remained in Canada with his family until October, 1832, in good health, and at hard labor. He was in the midst of the cholera epidemic at the time it prevailed, and passed through Canada and withstood its ravages with impunity, while hundreds around him fell sacrifices to its fatal influence.

In November, 1832, he again engaged himself to me for twelve months, for the express purpose of submitting to another series of experiments. He joined me at Plattsburgh, New York, and travelled with me to the city of Washington, where, with the facilities afforded by the head of the Medical Department, the experiments were continued upon him from November, 1832, to March 1833.

During the whole of these periods, from the spring of 1824 to the present time, he has enjoyed *general* good health, and perhaps suffered much less predisposition to disease than is common to men of his age and circumstances in life. He has been active, athletic, and vigorous; exercising, eating, and drinking, like other healthy and active people. For the last four months he has been unusually plethoric and robust, though constantly subjected to a continual series of experiments on the interior of the stomach; allowing to be introduced or taken out of the aperture, different kinds of food, drinks, elastic catheters, thermometer tubes, gastric juice, chyme, &c., almost daily and sometimes hourly.

Such have been this man's condition and circumstances for several years past, and he now enjoys the most perfect health and constitutional soundness, with every function of the system in full force and vigor.

theory which will stand the test of scientific examination and experiment. He established a theory of CHEMICAL SOLUTION, and taught that chymification was owing to the solvent action of a fluid, secreted by the stomach, and operating as a true menstruum of alimentary substances. To this fluid he gave the name of GASTRIC JUICE. It does not come within the scope of this work to give a detail of the experiments and reasoning which wrought conviction in the mind of this great man. It is only necessary to say that it was the result of patient and persevering experiment and research.

The truth of SPALLANZANI's theory has been sustained, so far as relates to the most important part, the existence of a chemical solvent, by all who have made fair examinations and experiments on the subject. The experiments of TIEDEMANN, and GMELIN, of LEURET, and LASSAINGE, confirm the same theory.

By far the most respectable and intelligent physiologists have now settled down in the belief that chymification is effected in the stomach by a peculiar and specific solvent, secreted in that organ, called, after SPALLANZANI, the gastric juice. From the difficulty, however, of obtaining and submitting such fluid to the test of experiment, and the diversity of results in the examination of such as has been obtained, much indefiniteness is experienced on this subject. The presence of an active solvent is rather an admission on their part—a conclusion from the effect to the cause. BROUSSAIS, speaking on this subject, says: "It remains for us to know whether the portion of mucous membrane belonging to the stomach, contains secretory organs, the office of which is to furnish a fluid fit to produce the assimilation of nutritive substances." And, again, speaking of the gastric juice, "The question is as yet *undecided*, though, if we are to judge by analogy, we shall observe that many animals are furnished with gastric glands, supplying a digestive liquid." This author *admits* the presence of a solvent fluid in the stomach, without, however, attempting to explain its specific effects or mode of operation, for he says, in another place, "We have expressed our opinion on this subject, but whether the gastric fluids possess an assimilating property which, for ourselves, we admit, without pretending to demonstrate its actual presence," &c.

RICHERAND, BOSTOCK, and nearly all the authors of modern date, teach the doctrine of digestion by the gastric juice, without, however, pretending to explain its exact mode of operation. Professor DUNGLISON, whose work on "Human Physiology," taken as a whole, perhaps, is the most comprehensive, arrives at the same conclusion. He says—"We have too many evidences in favor of the chemical action of some secretion from the stomach during digestion, to permit us to doubt, for a moment, of the fact." And again—"From all these facts, then, we are justified in concluding that the food in the stomach is subjected to the action of a secretion, which alters its properties, and is the principal agent of converting it into chyme."

The gastric juice appears to be secreted from numberless vessels, distinct and separate from the mucous follicles. These vessels, when examined with a microscope, appear in the shape of small lucid points, or very fine papillæ, situated in the interstices of the follicles. They discharge their fluid only when solicited to do so by the presence of aliment, or by mechanical irritation.

Pure gastric juice when taken directly out of the stomach of a healthy

adult, unmixed with any other fluid, save a portion of the mucous of the stomach, with which it is most commonly, and perhaps always combined, is a clear transparent fluid, inodorous, a little saltish, and very perceptibly acid. Its taste, when applied to the tongue, is similar to thin mucilaginous water, slightly acidulated with muriatic acid. It is readily diffusible in water, wine, or spirits; slightly effervesces with alkalies, and is an effectual solvent of the *materia alimentaria*. It possesses the property of coagulating albumen in an eminent degree, is powerfully antiseptic, checking the putrefaction of meat, and effectually restorative of healthy action when applied to old fœtid sores, and foul ulcerating surfaces.

Saliva and mucus are sometimes abundantly mixed with the gastric juice. The mucus may be separated by filtering the mixture through fine linen or muslin cambric. The gastric juice and part of the saliva will pass through, while the mucus and spumous or frothy part of the saliva remains on the filter. When not separated by the filter, the mucus gives a ropiness to the fluid that does not belong to the gastric juice, and soon falls to the bottom in loose white flocculi. Saliva imparts to the gastric juice an azure tinge and frothy appearance, and, when in large proportion, renders it fœtid in a few days; whereas the *pure* gastric juice will keep for many months without becoming fœtid.

The gastric juice does not accumulate in the cavity of the stomach until alimentary matter be received, and excite its vessels to discharge their contents for the immediate purpose of digestion. It then begins to exude from its proper vessels, and increases in proportion to the quantity of aliment *naturally* required and received. A definite proportion of aliment, only, can be perfectly digested in a given quantity of the fluid. From experiments on artificial digestion, it appears that the proportion of juice to the ingestæ, is greater than is generally supposed. Its action on the food is indicative of its chemical character. Like other chemical agents, it *decomposes*, or *dissolves*, and combines with a fixed and definite quantity of matter, when its action ceases. When the juice becomes *saturated*, it refuses to dissolve more; and, if an excess of food have been taken, the residue remains in the stomach, or passes into the bowels in a crude state, and frequently becomes a source of nervous irritation, pain, and disease, for a long time, or until the *vis medicatrix naturæ* restores the vessels of this viscus to their natural and healthy actions—either with or without the aid of medicine.

Such are the appearance and properties of the gastric juice; though it is not always to be obtained pure. It varies with the changing condition of the stomach. These variations, however, depend upon the admixture of other fluids, such as saliva, water, mucus, and sometimes bile, and, perhaps, pancreatic juice. The special solvent itself—the *gastric juice*—is, probably, invariably the same substance. Derangement of the digestive organs, slight febrile excitement, fright, or any sudden affection of the passions, cause material alterations in its appearance. Overburthening the stomach produces acidity and rancidity in this organ, and retards the solvent action of the gastric juice. General febrile irritation seems entirely to suspend its secretion into the gastric cavity, and renders the villous coat dry, red, and irritable. Under such circumstances, it will not respond to the call of alimentary stimulus. Fear and anger check its secretion also—the latter causes an influx of bile into the stomach, which impairs its solvent properties.

When food is received into the stomach, the gastric vessels are excited

by its stimulus, to discharge their contents, when chymification commences. It has been a favorite opinion of authors, that food, after it has been received into the stomach, should "remain there a short period before it undergoes any change;" the common estimate is one hour. But this is an erroneous conclusion, arising from inaccuracy of observation. Why should it remain there unchanged? It has been received into the organ which is to effect an important change upon it—the gastric juice is ready to commence its work of solution soon after the first mouthful is swallowed; and, certainly, if we admit that the gastric juice performs the office of a chemical agent, which most physiologists allow, it is contrary to all our notions of chemical action, to allow it one moment to rest. It must commence its operation immediately. That it does so, is distinctly manifested by close observation of its action on food in the healthy stomach.

It has been said, that when one meal follows another in quick succession—or, in other words, when a subsequent meal is taken before a previous one is digested—that it *some how* disturbs the process of digestion. This is generally true, and it allows of a definite solution. It is because more is received into the stomach, in the aggregate, than the gastric juice can dissolve. And this disturbance will result as well when too much food has been taken at once, as when too much has been received in rapid succession. But if the quantity be moderate no ill effect will ensue. Many children are in the habit of eating as often as once an hour through the day, in small quantities, without experiencing any bad consequences. Cooks are also accustomed to the practice of constantly tasting the various articles of food which they are preparing for the table, and yet I am not aware that they suffer any inconvenience from the habit. From these, and other facts, as well as from direct experiment, I think it is perfectly apparent that digestion must progress as well before as after the expiration of an hour. If, as has been suggested, the ingestion of food, in addition to the delay to itself, retards or stops the chymification of that which has been previously received, aliment, as it relates to those children who eat hourly, would be constantly accumulating; and there would remain in the stomach at night the whole quantity taken through the day: a supposition not to be credited, even by those disposed to make the most of a favorite opinion or doctrine.

Dr. WILSON PHILIP, in his "Treatise on Indigestion," says: "the layer of food lying next to the surface of the stomach is first digested, and in proportion as this undergoes the proper change, and is moved by the muscular action of the stomach, that next in turn succeeds, to undergo the same change." That chymification commences on the surface of the food I have no doubt, but I apprehend this to be the case as it respects each individual portion, and not the whole mass. I have frequently taken out portions from the stomach, a few minutes after they had been received into that organ, when they appeared to have received a full supply of gastric juice for perfect digestion, when submitted to the artificial mode. When a due and moderate supply of food has been received, it is probable that the whole quantity of gastric juice for its complete solution, is secreted and mixed with it in a short time. When an unusually full meal has been eaten, the necessary quantity for its complete solution is not so readily supplied. If a tenacious mass of food be used, the external portion of the whole quantity is first acted on, digested, and succeeding portions presented, &c. There is no ground for the opinion inferred, that the gastric

juice never leaves the parieties of the stomach, except as it chymifies food. It is a thin fluid, and is governed by the same laws that other thin fluids are. From numerous examinations of the stomach, I feel warranted in saying, at least in the human subject, that there is a perfect admixture of gastric juice and food—that the particles of food are constantly changing their relations with each other—and that they are mixed with a quantity of fluid, the gastric juice, liquids that have been taken during the meal, and (as there has generally been observed a large proportion of fluid, even after a dry and solid meal) I have been led to suspect a synthetic formation of water, from its elements. This mixture is perfectly heterogeneous at first, and is kept in constant agitation by the *churning* motions of the stomach. If the contents of the stomach be taken out, in from thirty minutes to an hour after eating, it will be found to be composed of perfectly formed chyme and particles of food, intimately mixed and blended; sometimes in larger and sometimes in smaller proportions, according to the vigorous or enfeebled state of the digestive organs, or the quantity or quality of aliment taken. Most commonly, if the meal have been moderate, the process of digestion will continue in the portion taken out, when placed on the sand bath at a proper temperature, and the motions of the stomach imitated.

From the circumstance that the introduction of sponge, tubes, pebbles, &c., by SPALLANZANI, and others, excited the discharge of the gastric juice, and from the fact, that the gum-elastic tube, in my experiments, produced the same effect, when the stomach was empty and healthy, I infer that the first effect of aliment on the stomach is one of *irritation* of the gastric papillæ, thus exciting the discharge of the gastric juice, and stimulating the muscular fibres of the stomach. The vermicular motions, being excited by mechanical irritation, not only carry the ingestæ into all parts of the stomach, and diffuse its mechanical influence throughout the whole inner surface of this organ, but, by this means, they uniformly mix the aliment with the gastric juice; which is constantly being secreted, in proportion to the quantity of food received into the stomach, (unless that be too much for the wants of the economy,) until chymification be completed. Some stimulus seems to be necessary to continue the motions of the stomach, after chymification is accomplished, in order to effect its complete discharge into the lower bowels. And it appears highly probable that the compound fluid of gastric juice and aliment, or chyme, by its acquired acid properties, affords this stimulus, and propagates the contractile motions of this organ, even after the mechanical irritation of the crude food ceases. This fluid acquires new chemical properties, becomes more acid and stimulating, as chymification advances, until it is completed. When it is all transferred to the duodenum the motions of the stomach cease.

On the subject of exercise or repose during the digestion of a meal there has been some diversity of opinion. It has generally been conceded, however, that a state of repose is most favorable to chymification. It has been said that during the digestion of aliment, the *energies* of the system were centred on the stomach, and should not be withdrawn to any distant part; that the stomach becomes a “centre of fluxion,” &c. I protest, again, against the use of terms which have no definite meaning. I believe the benefits of science will be better subserved by adhering to facts, and the deduction of experiment, than by the propagation of hypotheses founded on uncertain data. From numerous trials, I am persuaded that moderate exercise conduces considerably to healthy and rapid digestion. The discovery was the result of accident, and contrary to precon-

ceived opinions. I account for it in the following way. Gentle exercise increases the circulation of the system, and the temperature of the stomach. This increase of temperature is generally about one and a half degrees. Now, if the gastric juice be a solvent its action is similar to other chemical solvents, and its rapidity is increased in proportion to the elevation of temperature. Of the reason I leave others to judge. The effect is certain. Severe and fatiguing exercise, on the contrary, retards digestion. Two reasons present themselves for this—the debility which follows hard labor, of which the stomach partakes; and the depressed temperature of the system, consequent upon perspiration, and evaporation from the surface.

Exercise, sufficient to produce moderate perspiration, increases the secretions from the gastric cavity, and produces an accumulation of a limpid fluid within the stomach, slightly acid, and possessing the solvent properties of the gastric juice in an inferior degree. This is probably a mixed fluid, a small proportion of which is gastric juice.

Bile is not essential to chymification. It is seldom found in the stomach, except under peculiar circumstances. I have observed that when the use of fat or oily food has been persevered in for some time, there is generally the presence of bile in the gastric fluids. Whether this be a pathological phenomenon, induced by the peculiarly indigestible nature of oily food, or whether it be a provision of nature to assist this particular kind of diet, I have not as yet satisfied myself. Oil is affected by the gastric fluid with considerable difficulty. The alkaline properties of the bile may render it more susceptible of solution in this fluid, by altering its chemical character. Irritation of the pyloric extremity of the stomach with the end of the elastic tube, or the bulb of the thermometer, generally occasions a flow of bile into this organ. External agitation, by kneading with the hand, on the right side, over the regions of the liver and pylorus, produces the same effect. It may be laid down as a general rule, however, subject to the exceptions above mentioned, that bile is not necessary to the chymification of food in the stomach. Magendie says, "I believe that, in certain morbid conditions, the bile is not introduced into this organ," (the stomach;) inferring that, in a healthy state, it is always to be found there. There can hardly be a greater mistake. With the exceptions that I have mentioned, it is never found in the gastric cavity in a state of health; and it is only in "certain morbid conditions" that it is found there.

When bile is found with the gastric juice the acid taste is diminished, and the flavor of the bile prevails, in proportion to the quantity in the mixture.

The resulting compound of digestion in the stomach, or *chyme*, has been described as "a homogeneous, pultaceous, grayish substance, of a sweetish, insipid taste, slightly acid," &c. In its *homogeneous* appearance, it is invariable, but not in its *color*; that partakes very slightly of the color of the food eaten. It is always of a lightish or grayish color; varying in its shades and appearance, from that of cream to a grayish or dark colored gruel. It is, also, more consistent at one time than at another, modified, in this respect, by the kind of diet used. This circumstance, however, does not affect its homogeneous character. A rich and consistent quantity is all alike, and of the same quality. A poorer and thinner portion is equally uniform in its appearance. Chyme from butter, fat meats, oil, &c., resembles rich cream. That from farinaceous and vege-

table diet, has more the appearance of gruel. It is invariably distinctly acid.

The passage of chyme from the stomach is gradual. Portions of chyme, as they become formed, pass out, and are succeeded by other portions. In the early stages, the passage of the chyme into the duodenum, is more slowly effected than in the later stages. At first, it is more mixed with the undigested portions of aliment, and is probably separated with considerable difficulty, by the powers of the stomach. In the later stages, as the whole mass becomes more chymified, and fitted for the translation, the process is more rapid; and is accelerated by a peculiar contraction of the stomach, a description of which will be found in the next section. It appears to be a provision of nature, that the chyme, towards the later stages of its formation, should become more stimulating, and operate on the pyloric extremity of the stomach, so as to produce this peculiar contraction.

After the expulsion of the last particles of chyme, the stomach becomes quiescent, and no more juice is secreted, until a fresh supply of food is presented for its action, or some other mechanical irritation is applied to its internal coat.

Water and alcohol are not affected by the gastric juice. Fluids, of all kinds, are subject to the same exemption, unless they hold in solution or suspension some animal or vegetable aliment. Fluids pass from the stomach very soon after they are received, either by absorption or through the pylorus.

CIRCULATION OF THE BLOOD.

THE following essay was written by J. V. C. SMITH, M. D., of Boston, and is, in the opinion of the Editor, the very best article on the subject, intended for popular instruction, that he has met with. He could not write a better one, and therefore does not hesitate to adopt this.

A demonstration of the circulation of the blood, in a popular manner, to be comprehended by those who have never learned anatomy methodically, is no easy task; we shall, however, endeavor to make the subject interesting, by first avoiding all unnecessary technicalities;—secondly, simplify what is too commonly considered a complicated, puzzling sort of anatomico-physiological study;—and thirdly, describe the structure and functions of individual parts, according to the present state of our knowledge.

THE HEART.

It would seem, at first view, from the high office of the heart, so constantly found in all the animals with which we are familiar, that no organized being could possibly exist without it. Strange, however, as it may appear, there are various classes, in the lowest orders of animal creation, which are totally destitute of it; still, they have blood, and that can under no circumstances be dispensed with,—but is not propelled by one single organ through the vessels. There is a compensation, however, in the structure of the primitive vessels,—or, to be understood, the largest trunk of a blood vessel takes upon itself all the functions of a muscular heart, exerting by successive pulsations, a power adequate to the physical requirements of the body in which it is found.

The caterpillar is a good example of this kind of mechanism: the tube from which all the smaller branches have their origin, lies on the back, running nearly the whole length of the worm, so superficially, that through the skin, with a very common lens, it may be seen, alternately dilating and contracting,—by which the blood is forced into all the diverging pipes, and thus driven to their utmost extremities. Numerous, indeed, are the insects and vermin, in which this kind of organization is discoverable. But it is not an organization favorable to longevity, for those in which this simple apparatus exists, are the beings only of a day; they flit in the sunshine a few hours; the object of their creation is attained, and old age, the old age of a butterfly, crumbles them into dust.

A resemblance to this sort of machinery is noticed in all the fishes; though they have a heart, it is exceedingly imperfect, when compared to the same organ in warm-blooded animals. Indeed, the fish has but *half of one*. Singular as this assertion may appear, the fact will be proved, in the course of this article. All their blood,—and in some of the huge monsters of the ocean there is a prodigious quantity,—is sent its unerring rounds by an *artery*, and not by a heart or any particular part of one. Here then we discover a relationship in structure;—and we also clearly perceive that a force is exerted by the spontaneous contractions of a single vessel, equal, (for it must be in sharks of thirty feet in length,) to a moderate sized fire-engine. We positively know it to be so, because the blood, by each pulsation, is driven through as much space in a given time, as the water is thrown by the piston of the engine.

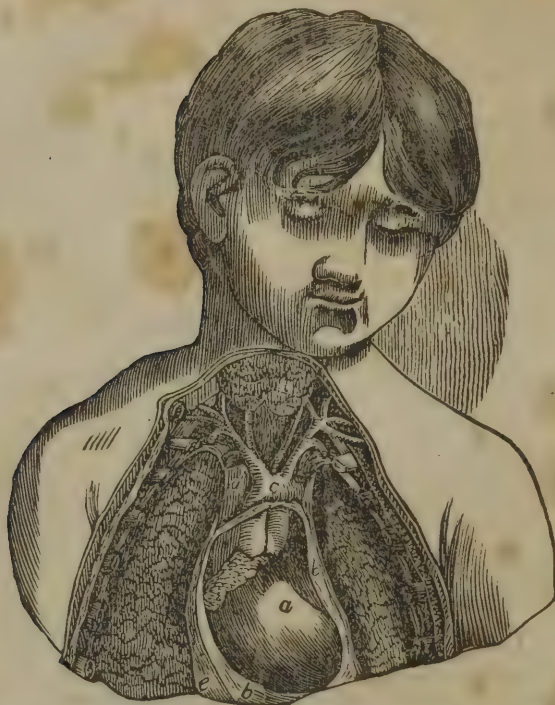
In the mammalia, that is, animals breathing air, the heart is the centre of the circulation—the point from whence the blood starts, and the instrument of propulsion, by which it is kept going in an endless round, in the body. It is a forcing pump, by which a column of fluid is raised, and an imitation of its mechanism may be examined in every house in which one of these convenient machines is used for filling tanks in the upper apartments. However, notwithstanding the curious fact of the similarity of action, the one is self-moving, having incorporated within its own substance, the wonderful power of generating physical strength; while in the other, an extraneous force must be applied, somewhere, to put it in motion, and be maintained artificially, so long as it is in action.

Surely the most sceptical must acknowledge, in this instance, and it is only one of many millions which might be cited, that the work of an Almighty Being is here most certainly manifested. How simple the contrivance, yet how astonishing the results!

In warm-blooded animals, the heart is a compound engine. If we go back to the fishes it is there single; but in man, quadrupeds and birds, it is double: two hearts are there, and both of them are forcing pumps. The same economy is exhibited in the arrangement of the individual parts and in the locality of the instrument, that we have so much admired in our former essays on the organs of sense. Yes, man has *two hearts*, but they occupy less room by being joined together, though, for aught we can discover, the system could be just as well supported, had one of them been placed at one side of the chest, and the other at another part. By being united, less substance would be required; labor, as we are obliged to represent it, though with no irreverent intention, was saved, symmetry was preserved, and the union of the two, actually conduced to the greater muscular power of both. That there might be no interference, no irregularity, but perfect order and harmony, only one acts at a time. The right heart rests while the left moves, and then, in perfect obedience to a law which cannot be explained, operates in its turn.

In configuration, the heart has no such vulgar shape as we are told in some of the books, like the ace of hearts on a playing card. It is exceedingly difficult to find anything to which it bears a resemblance. Certainly, however, it is a short cone, lying obliquely across the breast, the point of which beats, when in an erect posture, between the sixth and seventh ribs of the left side. Within, there are four apartments, so irregularly shaped, that they cannot be likened to anything. Each heart has its two cavities, communicating with each other by an orifice, about an inch in diameter, but a complete valve is suspended on the margin of the opening, like a gate, to close it, that all communication may be instantaneously interrupted, as, directly, we shall ascertain to be indispensably necessary, at each pulsation. Moreover, to prevent the heart from ever being over-distended, from having its walls put too much upon a stretch, little cords of astonishing tenacity, run from one side to the other, crossing and recrossing each other in all directions, which also assist, by contracting, to squeeze it, as it were, together, in forcing out its contents.

To secure it still farther, guarding against all contingencies, the heart is enveloped in a tough, slightly elastic membranous case. Having this external auxiliary, were the internal straps to be rent from their attachments, the swelling heart would be met from without, by its covering, and prevented from being ruptured by the accumulation of the blood within.



[The cavity of the chest laid open, to show the heart and lungs. *a*, the heart; *b b*, the pericardium cut open; *c*, the aorta, the great artery of the left side, that distributes the blood to all parts of the body; *d*, the great vein, called the descending vena cava, which, with the ascending, brings the blood to the right auricle; *e*, the pleura or membrane that covers the lungs.]

Lastly, that the freedom of motion might never be abridged, the heart is suspended by its upper end, at the top of the chest, with its own tubes too, being at liberty to swing in the triangular space given it between the lobes of the lungs, according to the various attitudes the body assumes. This is not all; the heart constitutes a hollow muscle, being as completely flesh as the muscles of the arm. Besides, it possesses all the essential characteristics of every muscle, the inherent property of contractility.

Having explained the fact that there are two hearts, it is now necessary to show the necessity of this arrangement, which is no easy matter, inasmuch as we are to adapt our demonstration to the capacity of the young.

Throughout the system, as before remarked, there are two sets of tubes for conveying blood;—one conducting it through the body, and the other returning it. To be serviceable to the system, which is the final cause of the elaborate machinery under consideration, two other important organs must necessarily claim attention, viz. the stomach and the lungs. In the former, the food is converted into a milky liquor, from whence it is actually conveyed into one of the cavities of the heart; but before it can be of any service, it must first be mixed with that already

in the veins. A chemical change is effected in it by being exposed to the action of the atmospheric air, that makes it blood.

As the first process is completed, the next object nature has in view, is to distribute it, and the left heart is the apparatus by which this design is effected. After having coursed through all the conducting pipes, it enters the extremities of the other class of ducts, through which the moving column of blood is returned into the right side of the chest, and finally emptied into one of the chambers of the right heart. We have before said that there is no communication between the cavities of the two hearts, but we perceive that the blood which is pouring into the right side, must be thrown somewhere, and as it cannot go into the left, where, the query will arise, does it move?—directly into the lungs. From thence it is collected, and by four branching tubes carried to the left heart. Thus, the left heart forces it in all directions from the centre, and the right heart forces that which has been returned, into the lungs.

By an untiring labor of the two hearts, acting alternately, from birth till death, this important substance, on which life depends, the blood, is kept always going and coming, and whatever property or quantity is lost on the route, is supplied by the activity of the stomach, the great laboratory in which the material is manufactured of which it is originally made.

Authors detail the particulars of what they call the *two circulations*,—viz. the *greater* and *lesser*, by which is to be understood, that the right heart and lungs constitute this lesser, because the force of the engine is only exerted to throw its contents into the air cells of the lungs. On the other hand, the great, or in the language of the books, the greater circulation, means the left heart and all the arteries leading from it, quite to the extremities.

As the power to be exerted by the left heart, in order to throw the blood the entire length of the body, is vastly superior to its fellow, which is only required to push its volume of blood about ten inches, to reach the extreme termini of its boundaries, so it is proportionably stronger in its substance; thicker in its walls, and more sensitive to the application of stimuli. In the act of dying, the left heart invariably clears all its cavities,—and therefore is always empty on dissection, but the right heart remains full and burthened.

Ultimum moriens, the last part to die, was an accurate remark of the old anatomists. In reptiles and fishes, so irritable is the heart,—and, remember, they possess only one half that which we have, equivalent to the left one,—that long after the body is dead, the heart, separated from all its connexions, will continue to pulsate upon the table for half an hour;—but more, when it has exhausted itself, if it be touched with the point of a pin, it will be roused into activity again, and beat and throb as though it were conscious of making a desperate struggle for existence.

When the frog's heart has been a whole hour under inspection in an adjoining apartment, it will continue to gratify the student by showing him precisely the order of action in each of its fibres, even by blowing it. The mangled body, all this time, disemboweled, shocking as it may seem, leaps about the house, without a heart, without blood and with lacerated nerves and muscles, apparently just as well as before these cruelties were commenced.

A short description of the internal mechanism, cannot be dispensed with in this paper, reluctantly as we may feel to bind the mind down to the minute inspection of hair like threads, whose sonorous names in the

appropriate language of a professor, would indicate to an unpractised ear, monstrous cables, pillars of real flesh, large as one of the columns in the capitol at the city of Washington:—but this jargon of unmeaning sound, is the misfortune of all the sciences, entailed upon us by our indefatigable predecessors.

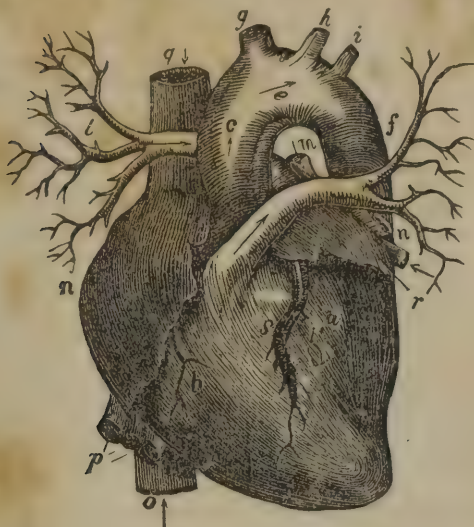
Each heart has two cavities, as before repeatedly remarked,—or, for the sake of conforming to the usual method of description, the heart has four cavities, two of which are the *auricles*, being uppermost, and two directly beneath them, the *ventricles*. These auricles are partly fleshy and partly membranous, being considerably elastic, though often enormously distended under peculiar circumstances of disease. They are the receiving points, the reservoirs, where the blood is collected, preparatory to being delivered into the other depots, the ventricles.

The numerous capillary threads, already spoken of, reaching from one side to the other, are called *cordæ tendineæ*, and those which are fleshy in the middle, *columnæ* and *massæ carneæ*. Their office is merely to prevent the auricle from being overcharged,—acting precisely upon the principle of a tape the manufacturer tacks in to keep the lid of a trunk from falling open so far as to wrench off the hinges. From the lower part or bottom of the auricle, the opening into the ventricle is a smooth round hole, quite firm, which is opened and closed by a valve that springs downward, but never, in any instance on record, has been pushed up through. The valve is curiously supported by little tags, lincs and weights, to prevent its being pressed by any force that might have a tendency to press it the wrong way,—and at the same time, these accompaniments assist in moulding the edges precisely to the ragged surface of the border of the hole, so that it shall be completely tight. That it is impervious, may be inferred from the fact, that the heart has been repeatedly ruptured by its own exertion, on the blood filling its ventricles, or auricles, yet the strong walls, half an inch in thickness, gave way, while the tiny, transparent valve, maintained its place.

That, or rather the strips which enter into its composition, being fancifully imagined to be three, takes the name of *tricuspid*, because it has three points, thought to resemble teeth, hence the appellation, sometimes called *triglochine valves*. On the top of the auricle, two or three large veins present their mouths:—one is the *vena cava superior*, the great trunk which brings all the blood from the head and arms into the reservoir; and another, nearly opposite, is the *vena cava inferior*, in which all the blood is brought from the feet and body. There is a third, very much smaller, however, the *coronary vein*, returning the blood which has circulated exclusively in the substance of the heart. Over this last opening, is a crescent shaped valve, highly important, for were it not there, every time the auricle contracted, it would force the blood wherever there was no resistance, which, therefore, instead of allowing the venous blood to return into the common fountain, would be continually driven onward, so that the heart itself would suffer from an obstructed circulation: this half moon shaped valve, swinging downward, entirely opposes the ingress of blood from the auricle, yet freely allows that coming from the heart to make its exit by the valve.

Can we contemplate anything more purely mechanical than this contrivance? Now can any one in his senses argue himself into the absurd belief, that this peculiar arrangement, this striking adaptation of parts, all

concurring to the utmost perfectability of the machine, splendid in its structure, *happened all by chance!*



[a, the left ventricle; b, the right ventricle; c e f, the aorta, the great artery that goes off from the left ventricle; g h i, the arteries that are sent off from the arch of the aorta; k, the pulmonary artery, that goes from the right ventricle to the lungs; l l, branches of the pulmonary artery, going to the two sides of the lungs; m n, the pulmonary veins, which bring the blood back from the lungs to the left side of the heart; n, the right auricle; o, the ascending vena cava; q, the descending: these two meet, and, by their union, form the right auricle; p, the veins from the liver, spleen and bowels; s, the left coronary artery, one of the arteries which nourish the heart.]

Well, the auricle being filled,—the sense of fulness, a property or sensibility entirely independent of the mind, and withal, wholly beyond the control of the laws of volition, prompts it to expel it. This it does by collapsing: by simultaneously contracting all its parts upon the mass within, which is thereby driven, *per saltum*, through the great canal, down into the ventricle,—the second apartment. To admit it there, a preparation is necessary on the part of the ventricle,—and that consists in relaxing itself to enlarge its capacity for receiving the portion that is on the way from the auricle. At the instant of being filled, the tricuspid valve, which was before pendulous, flaps back, cuts off all further communication, and thus holds all that has been admitted, to be afterwards disposed of.

Because the auricle is obliged to make an effort only strong enough to urge its contents by the valve, it is comparatively slightly made, weaker than the ventricle.

Having the ventricle filled, let us watch the process by which it clears itself. It has been premised, that its duty is to push the blood to the lungs, a distance of about ten inches, though if we suppose that the extreme ramifications of the bronchial arteries are gorged by each throw of the ventricle, the power is equal to projecting the stream between seventy and eighty feet. This point is rather dubious; the anatomists have not satisfied themselves or any body else, exactly, whether the ventricle actually presses the blood to the extreme twigs of the lungs, or only sends it beyond the valves in the mouth of the pulmonary artery, hardly a distance of seven inches. Be that as it may, the fact is notorious,—if it were not designed to exert a force more than ten times as great as the auricle, surely it would not have been made so very much stronger, and so amply provided with materials for that purpose.

If the auricle can send a column of blood ten feet, the ventricle, by its additional physical advantages, could throw the same quantity fifty feet in precisely the same time. This looks a little like being able to reach the lungs, notwithstanding the finely spun reasonings of authors to the contrary. Suffice it, that when the stimulus of distension creates the exciting sensation, the walls contract, as in the other case, and every drop of the blood goes through a very delicately smooth, round hole,—the only outlet from the ventricle, besides the place of entrance,—and this is the beginning of the *pulmonary artery*, or great blood vessel of the lungs. Here we leave the description of the right heart, for the present, lest minuter details should distract, rather than enlighten those who may, perhaps, endeavor to obtain their first accurate notions of this local piece of anatomy, from our dissertation. Much as the *heart of the body*, that on the left side, resembles the one before us, there are peculiarities requiring a careful and patient investigation, if we are desirous of perfectly comprehending its structure and interesting functions.

Were a well prepared specimen of the heart to be lying before the reader, he would regard the general appearance of strength in the left side, as though more depended upon it in the economy of life, than on its associate. Such is truly the fact, that the power manifested by it, is immensely superior.

United, as just seen, are the left auricle and ventricle, with a similar valvular communication between them. The left auricle is considerably larger than the right, but bears more resemblance to a square box, in a state of distension, than a sack. The entire office of this, is to expel the blood forcibly into its neighboring ventricle. Uniting by degrees, all the veins gradually terminate in four considerable trunks, in the two sides of the auricle, nearly opposite to each other. Two of them bring the blood from the right, and the others from the left lobes of the lungs. When the ventricle is full, let it be recollected that it must send its blood in two directions, viz. towards the head, as well as the feet; and at the same time, supply all the intermediate viscera, muscles, nerves, and even the very bones themselves, however hard or remote from the centre of the circulation. Whether the ventricle accomplishes the feat, remains to be discussed hereafter. By its contraction, a valve called the *mitral*, shuts back to prevent a regurgitation,—hence the blood can only escape through the canal provided for it. This is a long, dense, semi-membranous tube, nearly, if not quite, an inch in diameter, in man, known as the *Aorta*. Directly in the calibre of the aorta are three valves, so adjusted to the condition and shape of the artery, that the three, in being spread horizontally, (indeed the posture has no influence on the action) they effectually close the channel, so that nothing which may have passed the portals, can possibly be returned. Thus the functions of the two hearts are analogous; the principle of propulsion is the same, and indeed, when the office and anatomical organization of one is understood, it illustrates sufficiently well, the other. The line of union between the two, is termed the *septum cordis*. All the fibres of the two ventricles have a winding direction, which give the heart a twisting or vermicular kind of motion in its pulsations. The alternately swelling and collapsing, as when full, or empty, are, the *diastole* and *systole*, terms known to medical practitioners, to express the pulsations.

A few words upon the mode in which the heart is supported, together

with a sketch of the anatomy of its nerves, will close the remarks upon this beautiful organ for the present

Although the heart is the fountain of life, dispensing the blood, either directly or indirectly, to the smallest twig, wherever located, in the body, it requires a circulation of the same vitalizing fluid, to sustain its own existence.

For this purpose, there are vessels creeping out at the sides of the aorta, at right angles with the trunk, just above the semi-lunar valves, which wend their way directly to the divisional horizontal line, between the auricles and ventricles, where, carefully imbedded in a triangular depression, out of the way, the *coronary arteries* are continually sending off branches that dip down into the substance of the heart, supplying it abundantly with arterial blood. When it has completed its route, and is in readiness to go on again, to get within the cavities of the heart, from the extremities of the coronary arteries, *veins* commence, called *coronary*, which keep gradually uniting, and ultimately coalesce in one single tube, the *coronary vein*, the diameter of a writing pen, whose mouth was found, on the examination of the right auricle, behind a beautiful little coronary valve. In this way the substance of the heart is supplied with nutriment, to sustain it in a course of activity, that never tires, and which never ceases to palpitate, till death puts a stop to its motion.

NERVES OF THE HEART.

These are few, arising from the *sympathetic* and *eighth pair* of nerves. The *sympathetic*, is a kind of line of union, receiving a deputation from all the principal nerves throughout the frame, by which a connection is maintained with all the different parts of the complicated whole. The *eighth pair* of nerves arise in the brain, but traverse down the side of the neck, into the chest, following the course of the windpipe and œsophagus, quite to the stomach. From these, there being a pair, one on either side, filaments shoot off to the heart. The minutiae of the course is not essential. In this way the heart holds a line of communication with the work-shop, the stomach, where it looks for the manufacture of the material from which the blood is elaborated; and by the other set of nervous cords, it possesses a general relationship to all the portions of the living body, which look up to it for a maintenance.

Recollecting that no cerebral nerves go directly to the heart, explains the reason why the brain, or will, holds no control over its actions. Because there is a direct line of communication with the sensorium, by the nerves in the hand, we have only to command, or will, that the fingers move, than it is obeyed; but were they divided, no such act could be enforced, though the muscles, the motor organs, were in perfect health and condition. Placing the heart entirely beyond the reach of the inconstant, unstable will, was indeed a happy circumstance in the economy of our being. No one can put a stop to the pulsations of his heart, in a fit of despair or rage, as thousands would, were it possible. It still works on, by night as well as day, though the intellect sleeps,—and thus we are safely protected. If the pulsations and the maintenance of life, through the heart's agency, depended on our vigilance, how soon we should forget the charge, and suffer the chronometer of life to run down the first time it was left in our care. Wisdom,—the manifestations of an Ever Living, Omniscient Deity, are displayed at every stage of anatomical research.

THE PERICARDIUM.

An illusion, merely, has been made to the heart-case, or *pericardium*, the office and importance of which is very likely to be overlooked. It is the membrane which farmers sometimes make money purses of, on account of its softness, toughness and capacity. In the chest, lying between the breast bone in front and the spinal column behind, it is like a bag, kept on the stretch by a hoop; on either side are the lungs, confined, however, in their own appropriate cavities and pleuræ. A duplication of its inner coat invests the substance of the heart, closely, and on the surface, spread over the heart, as well as from the inside of the pericardium, a halitus is exhaled, that lubricates the cavity,—admitting the gentlest possible motions, as it swings in the apartment. Though the heart is moving about, its apex being sometimes at one point, and sometimes at another, according to our position, the pericardium never moves from its place, being always kept upon the stretch. When the heart has been wounded by a sharp instrument, the strength of the pericardium has restrained the hemorrhage for a time, under certain circumstances, and the poor sufferer has had an opportunity to prepare for his inevitable destiny.

ARTERIES.

To describe the arteries in a manner intelligible to persons who have never examined an anatomical preparation, in which these vessels are distended with wax, is certainly a difficult undertaking. Having gone thus far, however, in attempting a popular memoir on a very perplexing department of science, even to those who have had the advantages of seeing and feeling all that they read about, it will not answer to look back; if, therefore, we are unsuccessful in the experiment of making ourselves comprehended, the failure is not to be imputed to the want of a desire to simplify the subject, but to a lack of skill.

After all that is said in professional works, in which the catalogue of arteries laid down in the human body, seem almost endless,—and saddled, to, with specific names, too long and too orthographically complicated to be remembered through their pronunciation, there is really *but one artery*, all others being branches from it. But to answer the purposes of the surgeon, it is absolutely necessary to treat of each twig distinctly, in order that its relation to other parts may be impressed on the mind of an operator.

This one artery, the primitive trunk, is the *aorta*, rearing itself out of the left ventricle of the heart: collectively the parent tube, with its subdivisions into thousands of tortuous pipes, is denominated the *aortic system*; and when arteries and veins are spoken of together, as a whole, the term *sanguiferous system* is used by teachers. As the great cylinder rises up above the top of the heart, thick, white, and shining, it is bulged out at the sides, in three directions, at the place where the three *semilunar valves* are fixed. The enlargement is known as the *sinus of Valsalvi*, from its supposed discoverer. Gradually, it becomes smaller, preserving, however, a diameter equal to three-fourths of an inch, till it gets disengaged, and above the heart, where it is gracefully curved over and upon the spine, down which it runs the entire circuit of the chest and abdomen. On the last joint, though not constantly, of the back, it divides into two trunks, to be sent to the inferior extremities. On the highest point of the arch branches shoot off, to carry blood to the head and arms.

Those going up the side of the neck, are the *carotids*, the arteries which suicides divide in cutting their throats. It is by compressing these, as in hanging, that death is produced:—when they arrive at the angle of the under jaw, they divide into *external* and *internal carotids*:—the deep seated or inner ones go through an orifice in the bottom of the skull, to supply the brain; while the *externals* creep up by the side of the ear, face, &c., supplying all the muscles and bones in the vicinity.

At the last vertebra of the spine, the *lumbar region*, we left the descending artery, divided into two branches. In ascending from the heart, the large artery is called the *ascending aorta*, and having made the curve, the descending tube is the *descending aorta*.

These two trunks, now lying just within the brim of the pelvis, divide again, sending a supply of blood to the muscles and apparatus within the pelvis. The first trunks are the *external iliacs*, and the second set are the *internal iliacs*. Further down, in the thigh, in each limb, the arteries appear under the name of *femoral* arteries:—in the ham, behind the knee joint, the *popliteal*; still further, by the side of the shin bone, the *tibial*; in the foot, the *planter*, and so on, till the divisions become too minute to be discernible by the naked eye.

Between the arch and the pelvis, various little twigs are thrown off laterally, to nourish the lungs, diaphragm, liver, stomach, spleen, and other abdominal viscera,—each bearing a name indicating its destination, or office, or supposed resemblance to familiar objects. Here, then, we have exhibited a scheme of the arterial system, perhaps quite as well to have accompanied the text with drawings. The arteries must be nourished themselves, by a free circulation of blood in their coats, as much as the heart; otherwise, were they independent of the rest of the living body, they would be extraneous, and could not contribute to its wants. On the sides of all the arteries, millions of vessels, infinitely fine, more nearly like the down on a peach than arteries, conduct a circulation. This tissue or net work of miniature arteries, is the *vasa vasorum*. Finally, the arteries are made up of several coats, as though one tube were thrust into another, —which are muscular and membranous, according to their importance.

As they recede from the heart, the tendency is to keep subdividing, to supply every possible part,—hence, ultimately, they become too small to be seen. Between these points, and the commencement of the veins, is an intermediate set of *real* or *imaginary* vessels, the *capillaries*, through which the blood must pass to reach the veins. Such is the monstrous size of the aorta in a whale, that the whizzing velocity of the blood, at each systole, is audible to the harpooners: with the *stethoscope*, quite a modern invention, the rush of the blood may be heard in our own species.

That the arteries possess the property of contracting upon the blood cannot be denied. The heart, were it intended to force the column, independently of any assistance from the arteries, through their whole extent, we should suppose, was not adequate to the undertaking, because the proportions are unequal, in comparing the engine with the distance to which it is required to send the blood. The pulsations of the arteries indicate that they continue and propagate the action which was commenced by the heart.

Were it not so, of what use are the valves at the mouth of the aorta and in the pulmonary artery? If the volume to which an onward impetus had been given, could pursue the tortuous windings, quite to the capilla-

ries, of what need were the *valves*? The truth appears to be this, viz., the ventricle only throws the blood beyond the valves, which are thrust across the canal to prevent a regurgitation, and then the artery compresses it in turn. Onward it moves, to some other place, where, before the velocity that has been given it is lost, a second, third, and fourth pulsation as the case may be, completes the circle of action. Why is this theory about the motion of the arteries so very strange? Do we not actually feel that the radial artery pulsates in the wrist; and do we not also recollect that in the fish, an artery, the *aorta*, assumes the office of a heart; in the vermin, too, did we not show that the *aorta* and accompanying arteries carried on the perfect circulation, without any heart at all?

The arteries are not passive tubes, imbedded in the concealed interstices of the muscles, to conduct a fluid in which they have no part nor interest. They are not quiescent, like the wooden pump logs of an aqueduct corporation, remaining at rest till something disturbs them:—no; they are portions of a living whole, endowed with a vitality which results from this peculiar combination of organized matter. They feel the vigor, or the decay of other parts; they become diseased by over excitement; sicken, refuse to pursue their accustomed service; and when the crazy, shattered frame of the old man begins to tottle, the arteries, too, begin to flag, and finally cease to act at all. In old age they ossify—becoming perfectly bony tubes, for many inches together: by over action, they are enlarged into irregular sacks, or aneurisms; and in advanced cases, they burst, and the heart's blood is wasted so quickly, that life may be said to have exploded.

The tendency of age, is to relax the muscular fibre, and in this general debility, the muscular tissue of the arterial coats suffer in the general indisposition, becoming lax,—their diameters enlarge, and their power is diminished as their transverse diameter increases. The energy of the pulse is lost; the arteries however make an effort to sustain their accustomed vigor, by assuming a more tortuous course,—showing that the short curves which are made under these circumstances are favorable to the accumulation of physical power. Of itself, this acknowledged fact is a decidedly favorable argument, in support of the opinion that the arteries possess an individual faculty, wholly independent of the heart, to carry on the blood that has been delivered to them, to the places of destination. What is to be understood by the sonorous expression—*vis a tergo*—the ever present dodging post of the old physiologists, when they were harping upon something of which they were profoundly ignorant;—viz., the impulsive power of the heart and arteries? And what but a thick drapery to conceal the presumption of a pseudo philosopher is the *vis vitæ* of the same instructors? Too proud to acknowledge that the laws of life were unfathomable, they coined terms that made a show of expressing an explanation, when, in reality, they mean just nothing at all.

VEINS.

It is much easier to account for the propulsion of the blood from the heart, through the arteries, than to explain the process of its return through the veins. Their origin is in the capillaries, quite at the extreme terminations of the arteries, growing larger as they advance towards the centre of the body. They are seen through the skin at the ends of the fingers, on the arms, and indeed every where, creeping upward, becoming increased in size at every step, till they eventually are reduced in number to two principal trunks, the *superior* and *inferior* cavas, at the right auri-

cle. Their coats, which are the same as the arteries, are thinner and weaker—more dilatable, and consequently much oftener diseased and liable to accidents. Through their whole track, with a few solitary exceptions, there is a line of valves, the office of which is to hold the column from falling back, that has once passed above the lock. So frequent are these valves, that they may be detected every inch, in the great veins of the arms. By compressing the vessel above one of them, the blood at once accumulates in the form of a knot,—showing accurately the exact place of its locality. The principle of fixing a ligature round a limb, as a preparatory step to bleeding, with a lancet, is to stop the blood in its course,—there being no possibility of its going backwards, as it is held by the valve,—therefore, as the canal is closed by compression above, the escape is at the incision.

We will not pretend to inform our readers how the blood travels up the veins,—lying as they do, perfectly quiescent. It seems as though there must be a propulsive force exerted somewhere in the vicinity of the capillaries, to thrust the blood along, yet dissection gives us no clue to the mystery. In this case, we feel at liberty to resort to the old expedient of our shrewd forefathers, and say that the blood moves onward in the quiet veins, by its *vis a tergo*—leaving it to others more ingenious than ourselves, to find out what that can be.

The veins also perform other interesting duties, acting as absorbents, accompanying the arteries, wherever they may go, to be servants in waiting,—to pick up, and carry home, whatever may have been conveyed to a distance by their superiors.

THE BLOOD.

Were it not necessary in the plan of animal life to present every particle of blood, at certain intervals, to the influence of atmospheric air, there would have been no need of a heart. We might have been born with a sufficient quantity in our bodies, where it might have remained undisturbed, fulfilling the intentions of its design. Such a state of things, however, is not admissable, because it is secreted into the vessels to increase the growth, to repair the wastes, and to sustain the whole by its vivifying presence. Every bone, muscle, tendon, nerve, membrane and fluid, *is made out of the blood*. As the parts to be made cannot fabricate themselves, and afterwards take their appointed stations, the blood goes to the spot where this is to be effected, leaving material for a bone in one place, glue to hold particles together in another, and so on in its active round. But, on the other hand, these particles cannot fashion themselves:—the point of an artery, therefore, at which they are given off, assumes the office of an artizan, and moulds and finishes the work. We here discover that the arteries possess a wonderful property, which was not spoken of in the preceding paragraphs upon their anatomy. Industrious, and unerring in all the first years of life, invariably conveying just the sort of material that may be wanted to mend a broken bone, to heal a cut finger or to lubricate a joint, they grow careless in forty years:—they neglect supplying the eyes with sufficient quantities of humors to distend the ball, so we meet the emergency by wearing spectacles: they are forgetful of the order by which their early labors were regulated,—and, as one mistake leads to the commission of another, lime is carried to the heart, where the valves become bony; the urinary apparatus is carelessly watched, and stones form in the bladder; the teeth are not supplied with

earthy matter in season to prevent their decay:—the hair is not watered at the roots, and it becomes dry and falls off.

M. Tanchon read to the Academy of Sciences recently, a paper, representing his peculiar views of the cause of the circulation of the blood. This physician, resting his opinions on deductions derived from facts already ascertained, and not upon direct experiments, believes that the circulation is a movement of suction, and that this movement is the consequence of the formation of a vacuum, determined by the continual abstraction of some of the principles of the blood, which draws this fluid through the large vessels as well as through the capillaries.

Such cursory remarks as these, exhibit a bird's eye view of the importance and multifarious functions of the arteries, and demonstrates the high value of the blood, from which so much and such inimitable machinery is formed.

As we now comprehend the use of the circulation, we will next endeavor to solve another apparently difficult problem—the *why* it is necessary to throw the blood into the air cells of the lungs.

The sign of the vitality of the blood is its scarlet color, which it only exhibits in the heart and arteries. When it goes from the heart, it is charged with the presence, or admixture, of every material which can possibly be required; but on its way to the capillaries, all these several materials, supposed to be in solution, are dropped on the way, so that when the refuse, that is, the fluid, which was merely the medium of conveyance, enters the extreme beginnings of the veins, its color is almost black. Having, therefore, imparted all its needful qualities, it is totally unfit to be sent round a second time, till it is recharged. To obtain this quality, now lost, the *right heart* sends it into the lungs. Surrounding each distended air cell, is a thin sheet of black venous blood, which, by the mysterious influence of the contained air, changes the color, instantaneously, to its original *scarlet*. The orgasm, the suddenness of the change, cannot be conceived—yet the whole mass is re-vitalized, and is now carried into the left heart, to be again sent over the old ground. Such, in familiar language, is the circulation of the blood—a process well calculated to raise our admiration for the character, and transcendent power, and condescending goodness of our Creator.

Anatomists, in treating particularly of this important fluid, usually speak of its being composed of three substances, viz; *serum*, the watery, yellowish fluid; *fibrin*, the *crassamentum*, or cake; and the coloring matter. Were we not restricted in this paper to certain limits, it would certainly be an entertaining theme to detail the extravagant whims which the old authors entertained upon the subject of the red globules of the blood. It actually seems, to a calm spectator, who surveys the past and compares it with the present, as though the physiologists of the two last centuries bowed themselves down, to make themselves positively ridiculous, by the sweat of the brow. When, by some fortuitous circumstance, it was ascertained that the florid hue of the blood depended on the actual presence of floating globules, of different sizes, yet so minutely small as to appear like the coloring of an infusion, they set to work in earnest to investigate their use and structure. About the same time, unluckily, as all the old medical libraries in the universe will testify, Loewenhoeek invented the compound microscope, which enabled every body to peep into microcosms, where they beheld sights, quite imaginary in most cases, more astonishing than were ever before revealed to human eyes.

Whether they saw distinctly or not, it is now of little consequence; but at all events, they asserted the want of uniformity in the sizes of the globules, though each one was a *hexagon*, built up regularly and mathematically, as an architect would construct a country seat, of *six smaller hexagons*! However small—and some were supposed to be immensely beyond the magnifying reach of their glasses—they were all framed in the same workman-like manner. All this fine discovery being settled and indisputably admitted—for it would have been outrageously impolite for those who had no microscope, to call the marvellous discovery in question—their wits were in labor to devise a rank for them in the circulation. This, too, was accomplished; but to find out the diseases that originated in consequence of the mistakes, or refractory conduct of the compound hexagonal balloons, was a poser. There is nothing, by the way, like perseverance. A man who is lost in a fog has but one course to pursue, and that is to take care of himself; so it was with our discoverers; they had their mathematical bladders on hand, which must be disposed of—and here they are in all their beauty of arrangement, from the plastic hands of their accoucheurs.

Diseases, and they numerous, were the effects arising from *error loci*—that is, some of the large globules, fitted to the calibre of some peculiar artery, got wedged by some sad mishap at the mouth of a smaller vessel, or, becoming angry, refused to operate in the harness assigned to them, so puffed up—clogged the passage—and this produced *inflammation*, out of the modifications of which fevers, dysentery, dropsies, and all the other ills that flesh is heir to, save parturition, had a bona fida origin!

Enough has been written to stimulate our readers to the perusal of the old records of physiological folly in the original tongue, if they wish for an uninterrupted history of that singular discovery. To those who are more interested in the anatomical facts we have been relating, touching the heart and the arteries, it is needless to recommend them to the writings of those who are teachers by profession. Perhaps we may have committed ourselves in the ardor of the moment, by advancing ideas quite as absurd as those which we have been condemning; but in the demonstration of parts, we are conscious of being right, having given the anatomy of the circulation as we have found it, by years of toil; and as it regards theories, things made at little expense, like castles in the air, we are not tenacious about the respect that may be paid to them. Having been right merry over the conceits of our professional predecessors, we are quite willing to be laughed at in turn.

RESPIRATION.

RESPIRATION is one of the most important and interesting functions of the animal economy. Indeed, it has been considered by some physiologists, as “the *most* vital, if not the only *truly* vital process belonging to the system.” The function is universal. It extends throughout the whole circle of living matter. “All animals, from the lowest to the highest, whether they dwell in the air, in the ocean, on the surface of the earth, or beneath it, have a respiratory apparatus of some kind, and die if excluded from air.” Nor is it important only to the animal creation. Vegetables respire, and die without air. They live by respiration.

The respiratory organs, then, on the score of mere life, are of more importance than those appertaining to either the circulation or digestion—as the first derives its importance from its connection with respiration; and animals are known to exist, which are destitute of a stomach.

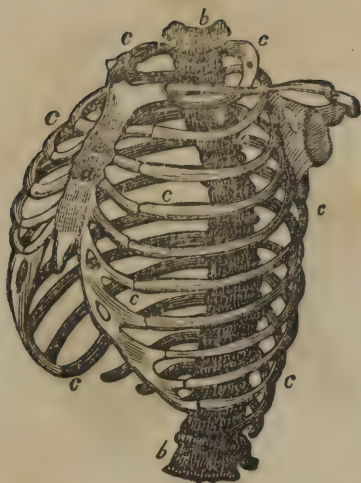
The modes of respiration vary in the different order of animals. In man, and warm-blooded quadrupeds, the breathing organs are confined in in a perfectly closed cavity, called the thorax, or chest. They breathe with a diaphragm,—an organ which will be described hereafter. Birds have no diaphragm; their lungs are more firmly fixed, and air is admitted into the cavities of most of the bones of the body. Amphibious animals can hardly be said to breathe at all—as they do not expand the chest, but swallow the air by the mouthful. Consequently, they die if the mouth be forced open, and kept in that condition for any length of time. Fishes breathe water with air in it. Their gills is the apparatus employed in the function. Insects breathe by stigmata, with air tubes leading from them to different parts of the body; and worms, by a moistened cellular covering investing the body, as the higher order of animals do by the cellular structure of their lungs. Leaves constitute the respiratory apparatus of plants, and are as necessary to their health and growth, as lungs are to the health and life of man. Strip a plant of its leaves, and you kill it. It is not the design of this chapter, however, to treat of respiration in any other than the warm-blooded class of animals—and before proceeding with the subject, the editor deems it necessary to acknowledge his indebtedness to Professor Dunglison and Dr. G. Hayward, for the matter that follows.

“To comprehend the mysterious process of respiration, we must be acquainted with the pulmonary apparatus, as well as with the atmospheric air, and the mode in which the contact between it and the blood is effected.

The *thorax* or *chest* contains the lungs, which are the great agents of respiration. It is of a conical shape, the apex of the cone being formed by the neck, and the base by a muscle, which has already been referred to more than once,—the *diaphragm*.

The osseous frame-work, as seen in the annexed cut, is formed, *posteriorly*, of twelve dorsal vertebræ; *anteriorly*, of the sternum, originally composed of eight or nine pieces; and *laterally*, of twelve ribs, on each side, passing from the vertebræ to, or towards, the sternum.

The different bones, constituting the thorax, are so articulated as to admit of motion, and thus to allow of dilatation and contraction of the cavity.



[a, sternum or breast bone; b, b, the spine; c, c, c, c, the ribs.]



[The DIAPHRAGM during expiration. a, its tendinous centre; b, b, its fleshy sides; c, c, the lateral cavities of the chest, in which the lungs lie.]

The cavity of the thorax is completed by muscles. In the intervals between the ribs are two planes of muscles, whose fibres pass in inverse directions, and cross each other. These are the *intercostal muscles*.

The diaphragm forms the septum between the thorax and the abdomen. Above, the cavity is open; and through the opening numerous vessels and nerves enter.

The muscles, concerned in the respiratory functions, are numerous. The most important of these is the *diaphragm*. It is attached, by its circumference, around the base of the chest; but its centre rises into the thorax; and, during its state of relaxation, forms an arch, the middle of which is opposite the inferior extremity of the sternum. It is tendinous in its centre; and is attached by two fasciculi, called *pillars*, to the spine,—to the bodies of the first two lumbar vertebrae. It has three apertures; the one before, for the passage of the vena cava inferior; and two behind, between the pillars, for the passage of the œsophagus and aorta.

In the structure of the *lungs*, as MAGENDIE has remarked, nature has resolved a mechanical problem of extreme difficulty. The problem was,—to establish an immense surface of contact between the blood and the air, in the small space occupied by the lungs. The admirable arrangement adopted consists in the circumstance, that each of the minute vessels, in which the pulmonary artery terminates, and the pulmonary veins originate, is surrounded on every side by the air. The lungs are two organs of considerable size, situated in the lateral parts of the chest, and are subdivided into lobes and lobules, the shape and number of which, cannot be readily determined.

They are termed *right* and *left* respectively, according to the side of the cavity of the chest they occupy. The former consists of three lobes; the latter, of two. Each of these exactly fills the corresponding cavity of the pleura; and they are separated from each other by a duplication of the pleura—the (the serous membrane that lines the chest, and is reflected over the lungs;) and by the heart. The color of the lungs is generally of a marbled blue; and the exterior is furrowed by figures of a hexagonal shape. The appearance is not, however, the same at all ages, and under all circumstances. In infancy, they are of a pale red; in youth of a darker color; and in old age, of a livid blue.”



[The lungs of man. *a*, the heart; *b*, *b*, the lungs; *c*, *c*, the diaphragm.]

“They are so vascular, that after air has once been admitted into them, they are specifically lighter than water. A knowledge of this fact has led to a mode of determining whether infants, supposed to have been murdered, were born alive or not. If the lungs would float in water, it was decided that the children must have breathed, and, of course, been born alive; if, on the contrary, they sunk, it was considered a proof that they had never breathed.

This is, however, somewhat of a fallacious test; for the lungs will float in water, even though the air may never have been admitted into them, as soon as the putrefactive process has commenced.

The lungs in the inferior animals, are known by the popular name of *lights*.

The nerves that are sent to these organs, arise, in part, from a nerve that originates in the brain, the eighth pair, and in part from the sympathetic nerve.

The air-tubes and air-cells are lined by a mucous membrane, and the lungs are covered on the exterior by a serous membrane, called the pleura, which is the seat of the disease known by the name of pleurisy. This membrane not only covers the lungs on the exterior, but lines also the chest, and is constantly lubricated in health, by a serous fluid which is exhaled from it.”

“The elements, that compose the lungs, are;—the ramifications of the trachea; those of the pulmonary artery, and of the pulmonary veins, besides the organic elements, that appertain to every living structure:—arteries, veins, lymphatics, nerves, and cellular tissue. The ramifications of the windpipe form the cavity of the organ of respiration.

“The windpipe is a tube composed of cartilaginous rings, extending from the mouth into the lungs. It is situated in front of the passage to the stomach, and at its upper extremity there is a valve, already noticed, which prevents the entrance of foreign substances into it. The rings of

which it is composed, are not cartilaginous in their whole circumference; they are membranous in the part where the windpipe is joined to the œsophagus.

As soon as the windpipe reaches the lungs, it divides into two branches, one going to each side; these are immediately subdivided into numerous smaller branches, which finally terminate in air-cells. After a few of the first subdivisions, the windpipe ceases to be cartilaginous; all the small branches are membranous."

"The surface afforded by the air-cells is immense. HALES supposed them to be polyhedral, and about one hundredth part of an inch in diameter. The surface of the bronchi he estimated at 1035 square inches; and that of the air-cells at 20,000. REIL estimated the number of cells to be 1,744,186,015; and the surface at 21,906 square inches; and LIEBERKUHNS has valued it at the enormous amount of 1,500 cubic feet! All that we can derive from these mathematical conjectures, is, that the extent of surface is surprising, when we consider the small size of the lungs themselves.

Within certain limits, the function of respiration is under the influence of volition. The muscles, belonging to it, have, consequently, been termed *mixed*, as we can, at pleasure, increase or diminish their action, but cannot arrest it altogether, or for any great length of time. If, by a forced inspiration, we take air into the chest in large quantity, we find it impossible to keep the chest in this condition beyond a certain time. Expiration irresistibly succeeds, and the chest resumes its pristine situation.

The same occurs if we expel the air as much as possible from the lungs. The expiratory effort cannot be indefinitely prolonged, and the chest expands in spite of the effort of the will.

Let us now enquire into the movements of *inspiration* and *expiration*, which, together, constitute the function of respiration. These acts are entirely accomplished by the dilatation and contraction of the thorax. The air enters the chest when it is expanded, and is driven out when the chest is restored to its ordinary dimensions;—the thorax thus seeming to act like an ordinary pair of bellows with the valve stopped: when the sides are separated, the air enters at the nozzle, and is forced out, when they are brought together."

"In a full inspiration, there is an evident elevation of the ribs, and in a forced inspiration, this elevation is much greater; the cavity of the chest being, in both cases, much more enlarged than in an ordinary inspiration.

This enlargement of the chest by the elevation of the ribs, is owing to the oblique direction in which the ribs are placed; so that when they are raised up, they are also turned outwards, and the cavity of the chest is, consequently, much enlarged.

The ribs are elevated in inspiration by the contraction of certain muscles. It was the opinion of HALLER that this elevation was produced by the intercostal muscles,—those muscles that are situated between the ribs. He supposed that the first rib was immovable, and served as a fixed point, and that the contraction of the muscles that arose from it, raised the next rib, and that in this way, all the ribs were elevated. This opinion has been generally adopted by physiologists till very recently, when it has been called in question by the celebrated MAGENDIE of Paris. He denies that the first rib is immovable, and appeals to every one's experience for the correctness of his opinion, and consequently denies that the intercostals are the agents by which the ribs are elevated. This effect, he says, is pro-

duced by those muscles which arise from the head, the spine and the superior extremities, and which are inserted into the chest. His opinion as to the mode in which inspiration takes place, differs from the one that is generally received, merely as to the particular muscles that elevate the ribs: the effect he admits to be the same, though produced by different agents.

Expiration, by which the air is expelled from the chest, is merely the reverse of inspiration. It has, like it, three degrees: the ordinary, the full, and the forced. The relaxation of the inspiratory muscles, and a slight contraction of the expiratory ones, enable the ribs and the breast bone to resume their ordinary situation. In forced expiration, however, the cavity of the chest is still farther diminished, by a powerful contraction of the expiratory muscles.

It is not easy to decide how much air is taken into the lungs at each inspiration. It is obvious that the quantity must be very different in different individuals, from the great difference that is known to exist in the size of the chest. The quantity, too, must differ in the different kinds of inspiration, much more being taken in, in a forced inspiration, than in an ordinary one. But, after allowing for these differences, physiologists have been unable to determine, with any degree of accuracy, the quantity of air taken into the lungs at each ordinary inspiration by an individual of the common size. The experiments, however, in which the most confidence is placed, fix the quantity at forty cubic inches for an ordinary inspiration; it has also been shown that one hundred and seventy cubic inches can be expelled from the lungs by a forcible expiration, and that one hundred and twenty cubic inches will still remain in them; so that the lungs may be considered as containing two hundred and ninety cubic inches in their quiescent state; to this amount must be added sixty inches for an ordinary inspiration, which will make the lungs contain three hundred and thirty inches in their distended state. Assuming these calculations to be correct, it follows, that about one-eighth part of the air contained in the lungs is changed in each inspiration.

The number of inspirations in a minute, varies somewhat in different individuals, the smallest number taken in health by an adult male is not less than fourteen, and they rarely exceed twenty-five. Eighteen is considered as the average number. Children and females breathe more rapidly than men; but even allowing that eighteen inspirations are made in a minute, it makes the number taken in twenty-four hours, amount to more than twenty-five thousand, and the quantity of air respired in that time exceeds one million cubic inches.

Respiration may be considered as a chemical process, if we regard the changes it produces in the air which is taken into the lungs. Atmospheric air is a transparent, compound fluid, elastic and compressible. It is composed of oxygen and azote, in the proportion of twenty-one parts of the former to seventy-eight of the latter, and one part of carbonic acid gas, or fixed air. Oxygen, or vital air, as it is sometimes called, because life cannot exist without it, though it is unfit for respiration unless combined with other gases, is somewhat heavier than atmospheric air. It takes its name from two Greek words, which mean the generator of acid, because it was supposed, until recently, to be the sole acidifying principle. It is a simple substance, and enters freely into combination with a great variety of other substances. Combustion cannot take place without it.

Azote, or nitrogen, is so called, because life cannot be supported by it.

It always exists in a gaseous state; it is insoluble in water, and not so heavy as atmospheric air. A lighted candle plunged into it, is immediately extinguished; it forms the basis of nitric acid, enters largely into the composition of all animal, and some vegetable substances. Like oxygen, it is a simple substance, and forms, when combined with it in different proportions, compounds of very dissimilar characters; such as atmospheric air, nitric acid, and nitrous oxyd, or exhilarating gas. It does not possess any positive deleterious properties, and it destroys life, when it is respired alone, merely by its negative ones.

Carbonic acid gas, or fixed air, which constitutes only one part in the hundredth of atmospheric air, is not a simple substance, but is composed of carbon and oxygen. It is called an acid, because it has the property, though in a slight degree, which is peculiar to acids, of turning vegetable blues to red. It is soluble in water, and much heavier than atmospheric air. It is incapable of supporting respiration or combustion. A lighted taper plunged into it is also immediately extinguished; and if an animal attempt to breathe it but for an instant, he is deprived of the appearance of life; and unless he be immediately furnished with atmospheric air, he cannot be resuscitated. It is this gas which is found in the bottom of wells and cisterns, and which renders them so unsafe to those who enter them without proper precaution.

While it is certain that carbonic acid gas possesses deleterious properties of a positive character, that render it unfit for respiration, even if it could be taken into the lungs, it is productive of very agreeable effects, when conveyed into the stomach. When dissolved in water, it imparts to it a pleasant acidulated taste. It forms the sparkling property of mineral waters, both natural and artificial; and in this way it is freely drank, without any injurious consequences: on the contrary, its effects is oftentimes salutary.

The air that we breathe, it thus appears, is a compound fluid, consisting of twenty-one parts of oxygen, seventy-eight parts of azote, and one part of carbonic acid gas. It is next to be seen what changes are produced in this fluid by respiration.

The ancients knew nothing of the changes effected in the air by the lungs. Their observation, to be sure, taught them, that respiration was essential to life; but they attributed this to the supposed effects which this process had on the circulation of the blood. It did not, of course, escape them, that the air thrown out of the lungs is warmer and more moist than when taken into them; but they were not aware that any other change was produced in it. This is not to be considered remarkable, when we recollect, that they were ignorant of the compound nature of atmospheric air.

The first approach towards the truth was made by MAYOW, an English philosopher, in the year 1674. He stated that the air was a compound fluid; that one of its constituents was essential to life and combustion, and that this principle combined with the blood in its passage through the lungs. But he went no farther; he knew nothing of the precise composition of atmospheric air, nor of the change which was effected in it, and in the blood, by respiration. His opinions were received with but little favor, and the ancient doctrine continued to prevail for many years after his time.

Dr. Black, in the year 1757, made known the important fact, that carbonic acid is produced in the lungs by respiration; and a few years after-

wards, Dr. Priestly discovered the nature and properties of oxygen gas. He made many experiments on the subject of respiration, and though he did not perfectly explain the changes produced by it in the air taken into the lungs, his followers are indebted to his discoveries for the additional light which they have been able to shed on the subject. Many learned men have, since this period, labored to elucidate this obscure point in physiology; and though there may be a slight difference in the results to which they have arrived, there is sufficient agreement among them for all practical purposes.

The volume of air thrown out of the lungs, is somewhat less than that which is taken into them. It is not easy to estimate, with precision, this loss, as it varies under different circumstances; the results of the experiments that have been made to settle this point, have differed considerably, there being in some cases, no apparent loss, while in others it was very evident. Some of the best physiologists of the present day, however, have fixed the amount lost at one eightieth part of the volume taken into the lungs; that is, half a cubic inch at each inspiration.

The quantity of azote, or nitrogen, is nearly the same under ordinary circumstances, in expired air, as in the air which is inspired. Some experimenters have recently asserted that there is a loss of azote in respiration; but the amount of the loss is small, nor does it appear to be a uniform effect of respiration. It is safe, therefore, to conclude, that if there be any loss of azote, it is trifling in amount, as this loss frequently has not been detected in very skillful and well executed experiments.

The quantity of oxygen is diminished by respiration, and that of carbonic acid gas is increased. Expired air, instead of containing twenty-one parts of oxygen, like atmospheric air, has but eighteen parts, and contains four parts of carbonic acid gas, instead of one. Some physiologists are of opinion, that all the oxygen that has disappeared, may be accounted for by the carbonic acid gas that is formed, while others believe that a portion has united with the blood. This point may, perhaps, be considered as still unsettled. We shall say more of it when treating of the changes produced in the blood by inspiration.

The next point of view, in which the important process of respiration is to be considered, is as to the effects which it produces on the blood that is sent to the lungs. It has been before explained, that the blood, which is derived from digestion, and that which is returned by the veins from all parts of the body, is carried to the right side of the heart. It is of a dark color, and unfit for the purposes of life. It is sent by the contraction of the right ventricle to the lungs; it passes through numberless vessels of the smallest size, and is carried to the left side of the heart, of a bright scarlet color. How is this effected? We have seen, above, that the quantity of carbonic acid is greater in expired, than in atmospheric air. But the oxygen contained in the carbonic acid gas, does not account for all the oxygen that is lost. Some have supposed that a portion of it unites with hydrogen, and thus forms the watery vapor that is thrown off from the lungs. This is not, however, the prevailing opinion. The fact seems to be, that in respiration, both the air and the blood part with something, and receive something from each other. The air loses a portion of its oxygen, a part of which goes to the formation of the carbonic acid, and the remainder unites with the blood; the blood, also, parts with some of its carbon, which unites with the oxygen taken into the lungs, and is then thrown out in the form of carbonic acid; and another part of the oxygen

is absorbed by the blood. Thus, it appears that the blood parts with a portion of its carbon, and at the same time gains some oxygen.

This change in the blood in respiration, has been called the oxygenation of the blood, by those who explained it, on the supposition, that oxygen united with the blood in its passage through the lungs. It has also been called the decarbonization of the blood, by those physiologists who believe that the change is produced by the discharge of carbon. The truth seems to be, that the blood is both oxygenated and decarbonized by respiration; that is, that a portion of the oxygen taken into the lungs unites with it, and at the same time the blood throws off carbon in a volatile state, which unites with another portion of oxygen, while the air at the same time, loses some oxygen and receives some carbon, and thus forms carbonic acid gas.

It is certain, that if purple blood, out of the body, be exposed to the contact of oxygen gas or atmospheric air, it will become of a bright scarlet color. And on the contrary, blood of a scarlet color becomes purple when in contact with hydrogen, nitrogen, or carbonic acid gas. It seems also to be well settled, that if any part of the azote or nitrogen of the air, be absorbed by the blood, it is given out again, as there is no perceptible difference between the quantity that is expired, and that which is inspired. It is admitted, too, that no hydrogen is thrown out from the blood, but that the aqueous vapor, which is discharged from the lungs, is an exhalation of the watery or serous part of the blood. There can be but little doubt, that the blood absorbs, during respiration, more oxygen than is necessary to form the carbonic acid that is expired, and that the remainder unites with the blood, and contributes to the remarkable change which takes place in the appearance and properties of this fluid, in its passage through the lungs.

To whatever circumstance this change may be owing, it is certain, that it is one essential to life. If it were completely suspended, even for a moment, death would follow. The black blood, or the blood of the veins, or venous blood, as it is called, cannot support the the animal functions; they require the stimulus of the red arterial blood.

If respiration be suspended, the heart will, for a time, continue to throw the blood to the lungs; but when all the air is exhausted in these organs, so that they return purple blood to the left side of the heart, death immediately follows. This is owing, in a great measure, to the circumstance that black blood is now thrown into the coronary arteries, the nourishing arteries of the heart; and this organ ceases to act, when not excited by arterial blood. The action of the brain, too, cannot be continued for an instant, without the stimulus of oxygenated blood, and all the organs of the body are dependent on the brain and nervous system for their power of action.

Atmospheric air, is the only air which is capable of permanently supporting respiration. There are some others which are respirable, and others again which cannot enter the lungs. Oxygen, when respired, has been found highly stimulating, producing an increased action of the circulating system, and a consequent glow over the whole surface of the body. It is the opinion of Sir Humphrey Davy, that if it were breathed for any length of time, it would be productive of fatal consequences.

Nitrous oxyd, or exhilarating gas, when respired, produces a great excitement of the brain and nervous system, attended for the most part with very agreeable sensations. Its effects are somewhat like those of

alcohol, with this difference, that they are not so permanent, nor are they followed by a state of exhaustion.

Hydrogen and nitrogen or azote, have no positive deleterious properties, but are injurious when respired, only by excluding oxygen from the lungs.

Carburetted hydrogen, which is the gas employed for gas-lights, is positively injurious. If it be respired perfectly unadulterated, it is said to produce instant death. When mixed with atmospheric air, it produces vertigo, and loss of perception.

All the other gases are unrespirable; even carbonic acid gas cannot be taken into the windpipe by the most powerful voluntary efforts.

When it is recollected, that atmospheric air is alone capable of permanently supporting respiration, and that every adult individual respire about one million cubic inches in every twenty-four hours;—when it is borne in mind how essential this process is to health and even life,—that the functions of the body cannot be perfectly performed, if the lungs be not properly supplied,—that the spirits are depressed, and the energies of the mind impaired, it must be obvious that too great care cannot be taken that the apartments in which we live, should be well ventilated—that too many individuals should not be crowded together, and thus be compelled to breathe air which has been already respired, but that the lungs should be constantly furnished, both by day and by night, with that air which can alone impart vigor to the physical and intellectual system.

There are several actions of common occurrence, that are so intimately connected with respiration, that it may be proper to speak of them in this place; such as sighing, yawning, coughing, sneezing, laughing, and hiccup."

"*Sighing* consists of a deep inspiration, by which a large quantity of air is received slowly and gradually into the lungs, to compensate for the deficiency in the due aeration of the blood which precedes it. The most common cause of sighing is mental uneasiness; it also occurs at the approach of sleep, or immediately after waking. In all these cases, the respiratory efforts are executed more imperfectly, than under ordinary circumstances; the blood consequently does not circulate through the lungs in due quantity, but accumulates more or less in these organs, and in the right side of the heart; and it is to restore the due balance, that the deep inspiration is now and then established."

"*Yawning*, like sighing, consists of a full and protracted inspiration; but it differs from it in being followed by a slow expiration, and by being attended by an involuntary distention of the jaws." "It is excited by many of the same causes as sighing. It is not, however, the expression of any depressing passion, but is occasioned by any circumstance that impedes the necessary aeration of the blood; whether this be retardation of the action of the respiratory muscles, or the air being less rich in oxygen. Hence, we yawn at the approach of sleep, and immediately after waking. The inspiratory muscles, fatigued from any cause, experience some difficulty in dilating the chest; the lungs are, consequently, not properly traversed by the blood from the right side of the heart. Oxygenation is, therefore, not duly effected; an uneasy sensation is induced, which is put an end to, by the action of yawning, which allows the admission of a considerable quantity of air."

"*Coughing* is produced by a quick and powerful contraction of the diaphragm, which distends the lungs with air, and this is driven forcibly, by

the contraction of the abdominal muscle, through the trachea, for the purpose of expelling any foreign or irritating substance that may remain there, or in the lungs."

"*Sneezing* resembles coughing; but it is more violent and involuntary. The irritation that produces it, is applied to the mucous membrane of the nose, and Sir Charles Bell has shown that there is a connection by means of nerves between this part and some of the respiratory muscles."

"If a person be exposed for a short period to the partial and irregular application of cold, so that the capillary action of a part of the body is modified, as where we get the feet wet, or sit in a draught of air, a few minutes will frequently be sufficient to exhibit sympathetic irritation in the Schneiderian membrane of the nose, and sneezing. Nor is it necessary that the capillary action of a distant part shall be modified by the application of cold. We have had the most positive evidence, that if the capillary circulation be irregularly excited, even by the application of heat, while the rest of the body is receiving none of its influence, inflammation of the mucous membrane of the nasal fossæ and fauces follows with no less certainty."

"*Hiccup* is produced by a convulsive, rapid, and involuntary contraction of the diaphragm. In a low state of protracted disease, it is an alarming symptom, and not unfrequently precedes dissolution. There are some other actions that might be noticed, were it necessary; but it does not seem to be, as they may be easily understood by attending to what has preceded."

"*Laughing* is a convulsive action of the muscles of respiration and voice, accompanied by a facial expression, which has been explained elsewhere. It consists of a succession of short, sonorous expirations. The air is first inspired so as to fill the lungs. To this succeeds short interrupted expirations, with simultaneous contraction of the muscles of the glottis, so that this aperture is slightly contracted, and the lips assume the tension necessary for the production of sound. The interrupted character of the expirations is caused by convulsive contractions of the diaphragm, which constitute the greatest part of the action. In very violent laughter, the respiratory muscles are thrown into such forcible contractions, that the hands are applied to the sides to support them. The convulsive action of the thorax, likewise interferes with the circulation through the lungs; the blood, consequently, stagnates in the upper part of the body; the face becomes flushed; the sweat trickles down the forehead, and the eyes are suffused with tears; but this is apparently owing to mechanical causes; not to the lachrymal gland being excited to unusual action, as in weeping. At times, however, we find the latter cause in operation also.

The action of *weeping* is very similar to that of laughing; although the causes are so dissimilar. It consists in an inspiration, followed by a succession of short sonorous expirations. The facial expression, so diametrically opposite to that of laughter, has been depicted in another place.

Laughter and weeping appear to be characteristic of humanity. Animals shed tears, but this does not seem to be accompanied with the mental emotion which characterises crying in the sense which we employ the term. It has, indeed, been affirmed by STELLER, that the *phoca ursina* or *ursine seal*; by PALLAS, that the camel; and by HUMBOLDT, that a small American monkey shed tears when laboring under a distressing emotion. The last scientific traveller states, that the countenance of the *titi* of the Orinoco,—the *simia sciurea* of LINNÆUS,—is that of a child;—the same

expression of innocence ; the same smile ; the same rapidity in the transition from joy to sorrow. The Indians affirm, that it weeps like man, when it experiences chagrin ; and the remark is accurate. The large eyes of the ape are suffused with tears, when it experiences fear or any acute suffering."

SHAKSPEARE's description of the weeping of the stag,—

"That from the hunter's aim had ta'en a hurt,"

is, doubtless, familiar to most of our readers :

"The wretched animal heav'd forth such groans,
That their discharge did stretch his leathern coat
Almost to bursting ; and the big round tears
Cours'd one another down his innocent nose
In piteous chase ; and thus the hairy fool,
Much marked of the melancholy Jacques,
Stood on th' extremest verge of the swift brook,
Augmenting it with tears."

Sobbing still more resembles laughing, except that, like weeping, it is usually indicative of the depressing passions ; and generally accompanies weeping. It consists of a convulsive action of the diaphragm, which is alternately raised and depressed, but to a greater extent than in laughing, and with less rapidity. It is susceptible of various degrees, and has the same physical effects upon the circulation as weeping."

ANIMAL HEAT.

“It is worthy of observation,” says Blumenbach, “that man, in a living state, together with the other subjects belonging to the class mammalia, as well as the whole feathered race, are distinguished from the rest of the animal kingdom by this peculiarity, that the native heat of their bodies far exceeds, in degrees of temperature, the usual heat of the medium or element in which they live. With respect to man himself, it is, however, to be remembered, that he appears to be inferior, in the heat of his system, to those other kinds of animals we have just mentioned. Thus, in our climate, the heat of the human body generally stands at about the 96th degree of Fahrenheit’s scale, whereas, in other animals belonging to the class mammalia, the vital temperature very considerably exceeds this point, while it ascends still higher in individuals of the feathered tribes.

Indeed, the degree of native heat possessed by a healthy person is so constant and uniform, that in general, (provided we make allowance for the state of health peculiar to each individual,) its range will include but a very few degrees of the thermometer, whether the subject be exposed to the inclemencies of the most rigorous climate, or placed beneath the favours of a tropical sky. For the opinion formerly delivered by Boerhaave, that man has not a power of existing in a medium of such a nature as exceeds in temperature the native heat of his own body, has been refuted by a great number of characters learned in the science of physiology, and the reverse completely demonstrated and established by experiments well adapted to the nature of the subject. In this particular, indeed, appears to consist one of the great prerogatives of man, that imprisoned and confined to no one climate or zone of the earth, he is able to pass his life in any section of the immense globe we inhabit, and is free to fix his habitation either beneath the rigors of Hudson’s stormy channel, where the quicksilver passes spontaneously to a state of complete congelation; amidst the tempests of Nova Zembla, or in the bosom of those glaring solar fires, which scorch the glowing shores of the Senegal.

We proceed now to inquire into the origin and source of that astonishing fire, which minutely pervades our bodies, and uniformly supplies them with their necessary degrees of warmth. To pass in silence over the visionary conjectures of the ancients on the subject, some of the moderns have attempted to derive animal heat, with all its phenomena, from the matter of electricity and the nerves, others from the attrition generated by the circulation of the blood, others from the reciprocal friction between the solid elementary parts of living animals, while others, again, have embraced and defended different opinions.

But all these hypotheses are embarrassed with insurmountable difficulties, whereas, on the other hand, the utmost simplicity, and an entire correspondence to the phenomena of nature, combine in recommending and confirming that doctrine, in which the lungs are considered as the *focus* or *fire-place* where animal heat is generated, and the dephlogisticated part of the air which we breathe, as the fuel which supports the vital flame.”

Doctor Murray says, the blood is the source whence animal matter is formed. Its expenditures are supplied by acquisitions of chyle, which is a fluid less completely animalised. In the constitution of chyle, carbon

forms a considerable ingredient, and must, therefore, enter in the same quantity into the formation of the blood.

Animal matter contains a large proportion of nitrogen, hydrogen, and oxygen, and but very little carbon. When, therefore, it is formed from the blood, carbon must be left behind in considerable quantities; to throw which out of the circulation, is of the greatest importance. The only difference between venous and arterial blood, is, that the former contains a much greater proportion of carbon. To deprive the system of this superfluous quantity, the venous blood is made to pass through the lungs, where, meeting with the atmospheric air, it gives out its carbon to the oxygen inhaled, and is converted into arterial. Carbonic acid is formed from the union of the carbon with the oxygen, and is expired with the azotic gas. Instead, therefore, of oxygenation, we should give the term of decarbonation to the change which the blood undergoes in the pulmonary organs. There is no combination of the oxygen of the air, with the hydrogen of the blood. It is not necessary to an explanation of the phenomena of respiration, and the existence of the vapor may well be accounted for by the evaporation which must occur from so extensive a surface as that of the lungs at a temperature of 96°. This is the only theory which corresponds with the phenomena.

Dr. Crawford's theory of animal heat is, that in respiration oxygen combines with the carbon of the blood, a species of slow combustion takes place, and a quantity of caloric is evolved. The blood, by losing the carbon, is changed from venous to arterial, and acquires an increased capacity for heat in the proportion of 115 to 100. By this increase of capacity, the blood is enabled to take up the caloric disengaged from the oxygen, and thus to prevent its detrimental effects on the lungs. The arteries now convey the blood to every part of the body, where it is converted into venous, and of course, its capacity for heat diminished as much as it was previously increased. The caloric, therefore, is evolved, and being distributed over the whole system, preserves in it a uniform temperature.

There are other sources of heat. Of these, the skin is the principal. Experiments by Cruikshank, show that air in contact with the surface undergoes changes similar to those which are effected by respiration: a portion of the oxygen disappears, and carbonic acid is found in its place. It is averred that the consumption of oxygen depends on the quantity of blood directed to the cutaneous vessels, and, therefore, is increased by exercise, and a high degree of temperature.

As oxygen is taken into the stomach with the food, caloric is also evolved during the process of digestion, and in a small quantity is separated from the air in contact with the mucous surfaces.

But the amount of heat resulting from these sources is small in comparison with the amount given out on the surface of the body in causing the vapor of insensible perspiration.

In the stomach it unites with the aliment, which is converted into a liquid, while that produced by the mucous surfaces is consumed in rendering the secretion thinner, and evaporating it.

An infinitely greater laboratory is to be found in those processes of the body by which caloric is brought from a latent to a sensible state.

We have seen how much is evolved from the arterial blood, when it undergoes the change into the venous. Though the other sources are not so evident, their existence cannot be doubted.

Heat is evolved during the formation of solid matter from the blood. This we infer from the fact that solids have less capacity for caloric than liquids.

It is also set free by the secretions. During the operation by which these are produced, a more intimate mixture takes place between the carbon and oxygen, and the latter, of course, gives out a portion of caloric. To this rule there are two exceptions: in the secretion of bile and fat, combustible matter is abstracted from the blood. Heat is also increased by exercise; but whether this is owing to an increased flow of the blood or to some change in the muscles themselves, it is difficult to determine.

We well know that caloric passes from a hotter to a colder substance till both acquire the same degree of temperature. To this may be added the extensive evaporation which takes place from the surface and lungs. Besides, the air we inhale being cold before it enters the lungs, and hot when it leaves them, must have taken up some of the heat. The caloric thus removed amounts, in twenty-four hours, to as much as would suffice, when the atmosphere is at the temperature of 59° , to melt thirty pounds of ice.

As an auxiliary means, assimilation may be mentioned. By this process, the food being brought into a liquid state, must have a greater capacity for heat, and appropriate, of consequence, a large portion to itself. It has been proved by Crawford, that a much smaller quantity of oxygen is consumed in a high than in a common temperature. He has also shown that when the body is exposed to a very great heat, the change from arterial to venous blood does not take place. It is also probable, that under such circumstances, the blood acquires a vastly increased capacity for caloric. Such are the causes which counteract the increase of caloric in the surrounding medium. First: in a high temperature, little or no oxygen is taken into the system, nor do the processes go on which evolve caloric. And, second: evaporation from the surface and lungs, by converting a liquid into air, serves to absorb a vast quantity of heat.

John Hunter brings strong objections to the above theory, and Mr. Brodie's experiments are still more formidable—and it is only given here, as the one most easily comprehended by the great mass of general readers.

The strongest ground on which this chemical theory rests, is, that in all animals, the temperature is proportioned to the quantity of air taken into the lungs. Thus, birds, which have larger pulmonary organs in proportion, than any other class, have also a temperature 4° higher.

It has been stated that the air in their bones is for the purpose of facilitating their flight; but birds that are not volitant, have this cellular structure, as the ostrich; and some migratory birds, as the wood-cock, have not the above structure.

SECRETION AND NUTRITION.

THE term secretion, in physiology, is used to denote that process by which various substances are separated from the blood, either with or without experiencing any change during their separation. This process is not only called secretion, but the same term is applied to the substance thus separated. Thus, bile is the secretion of the liver; and that process by which it is formed, by the liver, is called secretion.

The function of secretion is of great importance in the animal economy. By it the nutritive parts of the blood are separated from it, and made to contribute to the nourishment and growth of the body. It is by this means too, that various substances are formed, which are intended to accomplish very important purposes in the system; and it is, moreover, by means of secretion, that various noxious substances are discharged from the blood.

In their composition, many of the secreted substances differ very materially; and the different secretory organs have been divided into three kinds: 1st. the exhalent vessels; 2nd. the follicles; and 3rd. the glands.

The exhalents are divided into two kinds, the internal and the external; the exhalations all occurring in the areolæ or internal cavities of the body, or from the skin and mucous membranes, and hence their division.

To the class of internal exhalations, belong 1st. the serous exhalation; 2nd. the serous exhalation of the cellular membrane; 3rd. the adipose exhalation of the cellular membrane; 4th. the exhalation of the marrow; 5th. the synovial exhalation; 6th. the exhalation of the coloring matter of the skin, and of other parts; and 7th. the areolar exhalation;—the principal of which can be but very briefly noticed in the present work.

The serous membrane, which covers the organs within the head, the chest and the abdomen, is continually, during life, exhaling a serous fluid, which has a close resemblance to the serum of the blood. This fluid is thrown out by this membrane to keep the surfaces on which it is exhaled in a moist state, and thus to enable the organs to move easily on each other. In the healthy condition, this fluid never accumulates in the cavities, the absorbents taking it up in proportion as it is deposited; but if, from any cause, the exhalents should pour out a larger quantity than usual, whilst the absorbents are not proportionably excited, accumulation takes place; or the same effect ensues if the exhalents pour out no more than their usual quantity, whilst the absorbents do not possess their due activity. Under either circumstance, we have accumulation or dropsy; and accordingly, dropsy may be either active or passive.

The cellular texture likewise exhales a serous fluid, analogous to that exhaled from the serous membranes, and which appears to have the same uses,—that of facilitating the motion of the lamellæ or plates on each other, and consequently of the organs, between which the cellular tissue is placed. In some forms of disease, this secretion collects and produces *œdema* or *anasarca*.

The cellular membrane, by a process of exhalation, also produces the secretion of fat. It is contained in cells, and is supposed to be in a fluid state when first exhaled. Its principal use in health seems to be from its physical properties, forming a sort of cushion under the skin, which protects it from injury in walking, standing, and in other positions of the body.

The fat, or adipose substance, as it is called, is supposed to aid in nourishing the body during sickness, being taken up for this purpose by the absorbent vessels and conveyed into the blood. It is considered an unfavorable symptom in disease, if emaciation does not take place, because it shows a want of power in the absorbing system, which is among the last to be affected. Hybernating animals—those that become torpid during the winter—are uniformly found to be much emaciated on the return of spring, having been nourished during their hybernation, by the absorption of their fat. The fat is usually of a yellow color, and inodorous.

The medullary substance, or marrow, as it is popularly called, is the secretion of a delicate membrane which lines the cavities of the bones. It is a substance somewhat resembling fat, and is found in the cavities of the long bones. Its use does not appear to be known. It is not, however, formed for the purpose of rendering the bones less brittle, as has been supposed by some, because it is most abundant in the bones of the old, which are much more brittle than those of the young.

The ligaments, which surround the joints, are lined by a serous membrane which secretes a fluid called synovia. This fluid, or synovial exhalation, is designed to facilitate the movements of the joints, by lubricating them, and thus enabling them to move with ease. It has been supposed by some, that this synovial membrane is not precisely like the serous membranes; the difference, if there be any, is so slight that it is not easily detected.

Such are, briefly, the most important of the internal exhalations—the exhalations of the coloring matter of the skin, &c., and the areolar exhalation, being of little interest to the general reader, are omitted.

The external exhalations are the cutaneous and the pulmonary; the one taking place from the skin, and the other from the mucous membrane that lines the internal parts of the lungs, wind-pipe, fauces, and mouth.

The cutaneous exhalation, or transpiration, is a transparent fluid constantly exhaled from the skin, and generally invisible, in consequence of being converted into vapor as soon as it reaches the surface; but, at other times, owing to augmentation of the secretion, or to the air being loaded with humidity, it is apparent on the surface of the body. Cutaneous exhalation or transpiration is hence divided into two kinds,—when invisible, it is called the *insensible transpiration* or *perspiration*; and when perceptible, *sweat*.

The fluid that is thrown off in this way from the skin, consists chiefly of water, with a small quantity of acid and salts of different kinds, with a minute portion of animal matter.

The uses of cutaneous transpiration are important; it renders the skin more pliable, and the sense of touch more delicate. It is also the most important agent in cooling the body, when it is exposed to a high temperature, and there is reason to believe that it carries out of the body some noxious property of the blood. It is certain that when it is lessened, or altogether stopped, the health becomes impaired, and many diseases are removed when copious perspiration is produced.

The pulmonary transpiration bears a striking analogy to that of the skin. This aqueous exhalation which is thrown off by the lungs during respiration, was at one time supposed to be formed in the lungs by the union of hydrogen from the blood, and oxygen from the inspired air, thus forming water. It is now, however universally admitted to be exhaled into the air-cells of the lungs from the pulmonary artery chiefly, but part-

ly from the bronchial arteries, distributed to the mucous membrane of the air passages.

The *follicular secretions* are effected from the skin, or the mucous membranes, as the follicles are small sacs or bags, which are met with only in the skin and the mucous membranes. They are, therefore, of two classes, the cutaneous and the mucous.

The pores that are seen on almost every part of the skin, are the outlets of the cutaneous follicles. They secrete an oily mucous substance, which mixes with the transpiration, and lubricates and softens the skin. When it does not pass off readily, the pores become obstructed, and appear as if they were filled with small worms; and these cause, when exposed to the air, the black spots sometimes observable on the face. There is a small follicle at the root of each hair. The wax in the ear is also secreted by the follicles.

Every part of the mucous membrane is, more or less, abundantly supplied with follicles. They secrete a fluid, which is supposed to resemble mucus; but this cannot be known with certainty, as it is impossible to obtain them separate. Some of these follicles exist on the tongue, and the small openings that are seen on the tonsils or almonds of the ears, which are situated in the back part of the throat, are supposed to be the outlets for the secreted fluids of these small organs.

The *glands* are bodies of various size, more or less of a rounded form, situated in various parts of the body. They secrete substances of a very different character, and, in some instances, having little or no resemblance to the blood from which they secrete them. In more perfect glands, there is found one or more arteries, which carry the blood to this organ, a set of veins which return a portion of it, and another set of vessels, which usually unite in a common trunk, called an excretory duct, which conveys the fluid formed by the gland to its place of destination. The intimate nature of the glandular structure is wholly unknown, and it is by no means determined whether the secretion is performed by this structure, or whether it is dependant on the action of the vessels alone. In some instances, where the secreted fluid differs very materially from the blood, the secretory apparatus is simple; while in other cases, in which it bears a close resemblance to the fluid from which it is separated, the organ by which it is effected is of a complicated character. It is probably impossible to settle a question of this kind by actual experiment.

The glands, as before observed, are of various size. The lachrymal gland, which secretes the tears, is a flat body, not larger than a small almond, while the liver, by which the bile is formed, weighs from two to three pounds in an adult in health, and sometimes in disease, weighs fifteen or twenty pounds. The liver is supposed to differ also from the other glands in this respect, that its secretion is not made from the arterial blood. This is by no means a settled point, as some contend that its secretion takes place as in the other glands, while others are of opinion that the bile is principally formed from the blood of the veins. It is certain that the liver has an artery, called the hepatic artery, a set of veins to return the blood to the heart, and an excretory duct, to convey the secreted fluid into the intestines: in addition to these, a large vein, formed by the union of several of the most important veins coming from the abdominal viscera, and called the *vena portæ*, enters into it, and is distributed throughout its substance. The blood in this vein, is necessarily of a very impure character; it has parted with its nutritive and vital principles,

and it is about to be returned to the heart, to be again sent to the lungs; to undergo the essential change which respiration effects in it. In this state it may be supposed to be loaded with noxious principles, and that it is sent to the liver for the purpose of parting with some of them. This is the view that is taken by some physiologists; while Bichat and others maintain, that the bile is formed from the arterial blood, and a third class, at the head of which stands Magendie, are of opinion that it is secreted from both the arterial and venous blood.

There are, then, but three kinds of secretory organs: by the first, the secretion is thrown out directly from the blood vessels; by the second, it is formed by the intervention of a small sac or vesicle, called a follicle; and by the third, it is effected by a much more complicated apparatus, known by the name of glands.

It is by no means easy to explain the manner in which secretion is performed. The same fluid is carried to the different secretory organs, and they separate from it substances that not only differ, in some instances, very essentially from the blood, but which also have very little or no resemblance to each other. In fact, the elementary principles of some of the secretions cannot be detected in the blood, and their formation is wholly inexplicable in the present state of our knowledge.

The glandular secretions are seven in number; those of the tears, saliva, pancreatic juice, bile, urine, sperm and milk.

The tears consist principally of water, and are secreted by the lachrymal glands. They are limpid, inodorous, and of a saltish taste. They contain minute quantities of common salt, phosphate of soda, soda, lime, and mucus. This secretion is more influenced by the emotions than any other; and hence it is concerned in the expression of lively joy and sorrow, especially of the latter.

The saliva is formed by three pairs of glands, situated in and about the mouth. It is poured out very copiously at all times, but more especially while eating. It is doubtful whether it contributes in any degree to the process of digestion: its principal use in this process seems to be to prepare the food, by mixing with it, so that it can pass with ease into the stomach. It also assists the voice, by keeping the mouth in a moist state.

Pure saliva has never been subjected to analysis, because it is nearly impossible to obtain this fluid, unless mixed with the other fluids of the mouth. It is no doubt true, however, that the saliva constitutes the greater part of the fluid thus obtained, so that the result of any chemical examination of it may be considered sufficiently accurate for all practical purposes. The saliva is a mild, viscid fluid, without smell, taste or color, and a little heavier than water. The properties of the saliva is not always the same: it sometimes contains acid, and it is well known to be acid after long fasting. It is on this account that it is a popular remedy, in that state, for ringworms, and some other cutaneous affections.

The pancreatic juice is secreted by a gland situated behind the stomach, called pancreas, or sweet bread. From the resemblance of this gland, both in structure and appearance, to the salivary glands, it has been thought to serve the same purposes. The pancreas secretes but a small quantity of fluid, and it is not easy to obtain much of it for the purposes of examination. Mr. Magendie, who has, probably, made the most experiments on the subject, states it to be of a yellowish color, saltish taste, inodorous, possessing alkaline properties, and capable of being coagulated by heat. He further adds, that the secretion of it is not increased during

digestion but rather diminished. The precise uses of this fluid in digestion, are not determined.

The bile, as is well known, is secreted by the liver, the largest gland in the body. It differs, very materially, both in appearance and properties from the blood. It is of a greenish yellow color, of an excessively bitter taste, thick, sometimes transparent, and sometimes opaque. It contains water, albumen, resin, and a great variety of salts. The purposes of the secretion of the liver appears to be two-fold; the bile probably assists in some way, which is not precisely known, in the formation of chyle, and there is reason to believe that it is made the vehicle to carry out of the system, under certain circumstances, substances, which, if retained, might prove noxious.

The secretion of urine is one of the most extensive, accomplished by any of the glandular structures of the body, and is essentially depurative; its suppression gives rise to formidable evils. The apparatus consists of the *kidneys*, which secrete the fluid; the *ureters*, which convey the urine to the bladder; the *bladder* itself, which serves as a reservoir for the urine; and the *urethra*, which conveys the urine externally.

The urine is separated from the blood in the kidneys, and its secretion takes place continuously. It does not appear to be intended for any local function. Its use seems to be restricted to the removal of the elements of the substances, of which it is composed, from the blood; hence it is solely depuratory and decomposing.

The removal of the constituents of the urinary secretion from the blood is all important. Experiments on animals have shown, that if it be suppressed by any cause for about three days, death supervenes, and the dangers to man are equally imminent.

The process of nutrition is one of the most curious and interesting within the scope of physiology. It means, the putting down and affixing the nourishment required by the body for its growth and renovation. The process is well described by Magendie, who has made more experiments, perhaps, with a view of elucidating the function, than any other physiologist.

“We know that the blood supplies all the secretions, internal and external; that it is renewed by general absorption, and by that of the chyle and the drinks: it now remains for us to study what takes place in the parenchyma of the organs and the tissues during the continuation of life, namely, *nutrition* properly so called.

From the state of the embryo to the most advanced old age, the weight and volume of the body are almost continually changing; the different organs and tissues present infinite variations in their consistence, color, elasticity, and sometimes their chemical composition. The volume of the organs augments when they are often in action; on the contrary their size diminishes when they remain long at rest. By the influence of one or other of these causes, their chemical and physical properties present remarkable variations. Many diseases often produce, in a very short time, remarkable changes in the exterior conformation, and in the structure of a great number of organs.

If madder is mixed with the food of an animal, in fifteen or twenty days the bones present a red tint, which disappears when the use of it is left off.

There exists, then, in the organs, an insensible motion of the particles which produce all these modifications. It is this interior mo-

tion, unknown in its nature, that is called *nutrition*, or *nutritive action*.

This phenomenon, which the observing spirit of the ancients had not permitted to escape, was to them the object of many ingenious suppositions that are still admitted. For example, it is said that, by means of the nutritive action, the whole body is renewed, so that, at a certain period, it does not possess a single particle of the matter that composed it formerly. Limits have even been assigned to this total renewal: some have fixed the period of three years; others think it is not complete till seven: but there is nothing to give probability to these conjectures; on the contrary, certain well proved facts seem to render them of no avail.

It is well known that soldiers, sailors, and several savage people color their skins with substances which they introduce into the tissue of this membrane itself: the figures thus traced preserve their form and color during their lives, should no particular circumstances occur. How can this phenomenon agree with the renewal of the skin according to these authors?

In resting on the suppositions of which we have spoken, it is admitted, in the metaphorical language now used in physiology, that the atoms of the organs can only serve for a certain period in their composition; that in time they *wear*, and become at last improper to enter into their composition; and that they are then absorbed and replaced by new atoms proceeding from the food.

It is added, that the animal matters of which our excretions are composed are the *detritus* of the organs, and that they are principally composed of atoms that can no longer serve in their composition, &c., &c.

Instead of discussing these hypotheses, we shall mention a few facts from which we have some idea of the nutritive movement.

In respect to the rapidity with which the organs change their physical and chemical properties by sickness or age, it appears that nutrition is more or less rapid according to the tissues. The glands, the muscles, the skin, &c., change their volume, color, consistence, with great quickness; the tendons, the fibrous membranes, the bones, the cartilages, appear to have a much slower nutrition, for their physical properties change but slowly by the effect of age and disease.

If we consider the quantity of food consumed proportionally to the weight of the body, the nutritive movement seems more rapid in infancy and youth, than in the adult and in old age; it is accelerated by the repeated action of the organs, and retarded by repose. Indeed, children and young people consume more food than adults and old people: these last can preserve all their faculties by the use of a very small quantity of food. All the exercises of the body, hard labor, require necessarily a greater quantity, or more nutritive food; on the contrary, perfect repose permits of longer abstinence.

The blood appears to contain most of the principles necessary to the nutrition of the organs; the fibrine, the albumen, the fat, the salts, &c., that enter into the composition of the tissues, are found in the blood. They appear to be deposited in their parenchyma at the instant when the blood traverses them; the manner in which this deposit takes place is entirely unknown. There is an evident relation between the activity of the nutrition of an organ and the quantity of blood it receives. The tissues that have a rapid nutrition have larger arteries; when the action of an organ has determined an acceleration of its nutrition, the arteries increase in size.

Many proximate principles that enter into the composition of the organs are not found in the blood ; as osmazome, the cerebral matter, gelatine, &c. They are, therefore, formed from other principles in the parenchyma of the organs, in some chemical but unknown manner.

“ Since chemical analysis has made known the nature of the different tissues of the animal economy, they have been all found to contain a considerable portion of azote. Our food being also partly composed of this simple body, the azote of our organs likewise probably comes from them ; but several eminent authors think that it is derived from respiration ; others believe that it is formed by the influence of life solely. Both parties insist particularly upon the example of the herbivorous animals, which are supported exclusively upon the non-azotised matter ; upon the history of certain people that live entirely upon rice and maize ; upon that of negroes, who can live a long time without eating any thing but sugar ; lastly, upon what is related of *caravans*, which, in traversing the deserts, have for a long time had only gum in place of every sort of food. Were it indeed proved by these facts, that men can live a long time without azotised food, it would be necessary to acknowledge that azote has an origin different from the food ; but the facts cited by no means prove this. In fact, almost all the vegetables upon which man and the animals feed contain more or less azote ; for example, the impure sugar that the negroes eat presents a considerable proportion of it ; and with regard to the people, as they say, who feed upon rice or maize, it is well known that they add milk or cheese : now *casein* is the most azotised of all the nutritive proximate principles.

A considerable number of tissues in the economy appear to have no nutrition, properly so called : as the epidermis, the nails, the hair, the teeth, the coloring matter of the skin, and, perhaps, the cartilages.

These different parts are really secreted, by particular organs, as the teeth and the hair ; or by parts which have other functions at the same time, as the nails and the epidermis. The most of the parts formed in this mode wear by the friction of exterior bodies, and are constantly renewed ; if they are entirely carried away, they are capable of reproduction. A very singular fact is, that they continue to grow several days after death : we have seen a similar phenomenon with regard to the mucus.”

To conclude, in the language of Dr. Hayward, “ All that is known on the subject of nutrition, may be stated in a few words : the various parts of the body, with but few exceptions, are furnished with nutritive arteries and absorbent vessels. The former have the power of depositing in the part to which they are sent, such substances as are adapted to their nutrition and growth. In cases of accident, by which any organ is injured, the nutritive vessels of the part, take on an increased action, and deposit a much greater quantity of their ordinary secretion, in order to repair the injury. But how this is accomplished, or in what way vessels of apparently similar character, and circulating the same fluid, can deposit substances of a very different character in different parts, is wholly unknown.”

THE NERVOUS SYSTEM.

THE nervous system includes the brain, the spinal cord, or marrow, the nerves, and the ganglions. The *brain* is a soft substance, partly reddish-gray and partly whitish, situated in the skull, penetrated by numerous veins, and invested by several membranes. Democritus and Anaxagoras dissected this organ almost 3000 years ago. Haller, Vicq d'Azir, and other anatomists of modern times, have also dissected and investigated it without exhausting the subject. Between the skull and the substance of the brain, three membranes are found. The outer one is called the *dura mater*. This is strong, dense and elastic. It invests and supports the brain. The next which occurs is the *tunica arachnoidea*. [Fig. 1.] This is of

Fig. 1.



Fig. 1, is a horizontal section of the cerebrum, and an oblique division of the cerebellum.

a, the anterior part of the corpus callosum.

b, the corpus striatum.

c, the optic thalamus.

d, the tænia semicircularis.

e, the anterior pillars of the fornix cut off at their base.

f, the commissure of the optic thalami.

g, the pineal gland, situated on the four eminences, termed the corpora quadrigemina.

h, valvula VIEUSSENSII.

k, the arbor vitæ shewn by an oblique section of, *n*, the cerebellum.

l, the fourth ventricle, terminating in,—

m, the calamus scriptorius.

n, the cerebellum.

a pale white color, yet in some degree transparent, very thin, and, in a healthy state, exhibits no appearance of vessels. The membrane below this is called the *pia mater*. It covers the whole surface of the brain. It is very vascular, and a great portion of the blood which the brain receives is spread out upon its surface in minute vessels. The brain consists of two principal parts, connected by delicate veins and fibres. The larger portion, the *cerebrum*, occupies, in men, the upper part of the head, and is seven or eight times larger than the other, the *cerebellum*, lying behind and below it. It rests on the bones which form the cavities of the eyes, the bottom of the skull and the *tentorium*, and projects behind over the *cerebellum*. On the whole exterior of the *cerebrum* there are convolutions, resembling the windings of the small intestines. The external reddish substance of the brain is soft and vascular, and is called the

cortical substance; the internal is white, and is called the *medullary* substance of the brain. This *medulla* consists of fibres, which are very different in different parts. The *cerebellum* lies below the *cerebrum* in a peculiar cavity of the skull. [Fig. 2.] By examining the surface, it

Fig. 2.

Fig. 2, exhibits the brain placed on its base, with a vertical incision made through the corpus callosum, as far as the anterior commissure, and continued posteriorly to the tubercula quadrigemina. The hemispheres are separated from each other and turned to each side. The septum lucidum and fornx are removed. The cerebellum, in a similar manner, is divided as far as the fourth ventricle.

a, a, the cut edges of the corpus callosum.

b, b, b, b, the tubercula quadrigemina.

c, the pineal gland.

d, medullary striæ in the fourth ventricle, which form the beginnings of the auditory nerves.

e, the third ventricle.

f, part of the pituitary stem.

g, the medullary portion of the cerebellum.

h, the fourth ventricle.

i, the calamus scriptorius, at the inferior part of the fourth ventricle.

k, the medulla spinalis.

l, the tænia semicircularis.

m, the peduncle of the pineal gland.

n, a section of the anterior commissure of the brain.



is seen to be divided into a right and left lobe, by the spinal marrow lying between, but connected at the top and bottom. Like the *cerebrum*, it is surrounded by a vascular membrane, reddish-gray on the outside, and composed of a medullary substance within. In proportion to its size, also, it has a more extensive surface, and more of the vascular membrane, than the *cerebrum*. In a horizontal section of it, we find parallel curved portions of the cortical and the medullary substances alternating with each other. Between the cortical and the medullary substance, there is always found, in the *cerebellum*, a third intermediate yellow substance. All the *medulla* of the *cerebellum* is always united in the middle by a thick cord. Experience teaches that, in the structure of the brain, irregularities are far more uncommon than in other parts of the human body. It is worthy of observation, that every part of the brain is exactly symmetrical with the part opposite. Even those which lie in the middle, and are apparently single (the spinal marrow for instance) consist, in fact, of two symmetrical portions. The total weight of the human brain is estimated at two or

three pounds. It is larger and heavier in proportion to the youth of the subject; and in old age it becomes specifically lighter. In delirious affections, it is sometimes harder and sometimes less solid and softer. The brain is the organ of sensation, and according to Phrenologists, of *mind*, and therefore, the noblest organ of the body.

The *nerves* of the animal frame are composed of bundles of white parallel medullary threads. Every bundle is surrounded with a soft sheath full of blood-vessels, and whose finest branches terminate in the substance of the nerves. These nerves are spread through the animal frame, and variously connected with each other. Only the epidermis, the hair and nails are destitute of them. They are of various size, according as they are composed of more or fewer bundles of medullary threads. In the course of the nerves there are a number of knots; these are called *ganglions*; they are commonly of an oblong shape, and of a grayish color, somewhat inclining to red, which is perhaps owing to their being extremely vascular. In particular parts of the body, the nerves come in contact with each other, and the bundles composing them are mutually interwoven to such a degree that they cannot be disjoined without violence. These communications are called *plexuses*, and are found particularly in the abdomen, behind the stomach, and in the region of the pit of the stomach, near the liver, mesentery, heart, &c. The final terminations of the nerves are various, particularly those which run to the organs of sense. In the auricular organ, for instance, the nerves terminate in a soft mass like pap, surrounded with moisture; the optic nerve terminates in a medullary skin; the nerves of taste terminate in little *papillæ*; those of feeling, in the points of the fingers, and the surface of the skin in general; those belonging to the muscles are lost in the texture of the same, so that their terminations cannot be accurately ascertained.

[Fig. 3.] All the nerves are embraced under the general head of the *nervous system*. This is most intimately connected with the brain and the spinal marrow, which may be regarded as a prolongation of it. The brain is the centre, from

Fig. 3. The left side of the brain and spinal marrow, shown by making a section of the cranium and the spinal column, and removing the dura mater.

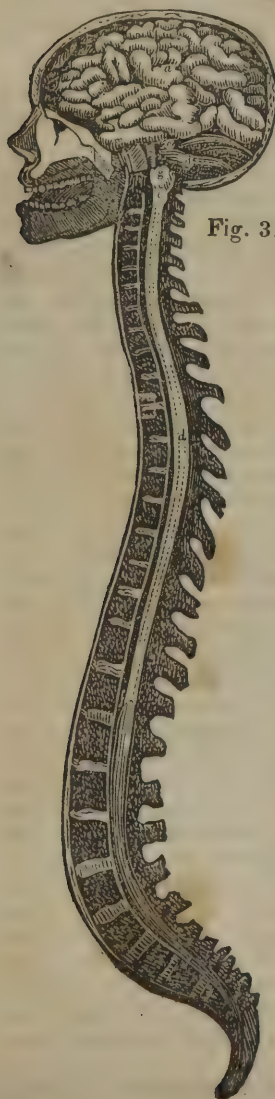
a, the convolutions of the cerebrum.

b, the laminæ of the cerebellum.

c, the pons VAROLII.

g, the medulla oblongata.

c, d, f, the medulla spinalis, extending from the first cervical to the first lumbar vertebra, and terminating in the cauda equina.



which, or to which, proceed all impression communicated to the nerves. The substance of the nerves is the same medullary matter which constitutes the brain, resembling the white of an egg, and appearing, to the unassisted eye, as if composed of little balls. The central termination of all the nerves is in the brain and spinal marrow, where they branch out into the skin or the interior of the organs. The various isolated, and, in part, heterogeneous structures of which the body consists, which are mechanically joined by the cellular tissue, the membranes and the ligaments, are united into one harmonious whole by means of the nerves. The vascular system connects them only so far as it furnishes the supply of blood required for their support and their operations; but it is properly the nervous system which imparts to all, their life, governs their operations, and establishes their sympathy and mutual action. This is effected by means of that portion of the nervous system which is diffused through the abdomen, forming many nets and plexuses, and constituting what is called the *vegetative*, or *reproductive*, or *organic nervous system*, because the growth and support of the body are effected by it. Another part of the nervous system affords the means of consciousness and voluntary action. This is the *brain* or *cerebral system* which excites the nerves that put in action the muscles of voluntary motion, and those which supply sensibility to the organs of sense, and convey to the brain the impressions thence received. The nerves which communicate with the organs of sense, run in pairs—the first pair (olfactory nerve) to the nose, where it is spread over the surface of the nostrils, and forms the power of smell; the second (optic nerve) to the eyes; this is round, thick, and penetrates from behind the ball or globe of the eye (through a round plate of the firm coat of the ball, containing many little apertures,) and is spread out on the inner and concave surface of the globe into a thin coat called the *retina*, on which the images of external objects are formed; the eighth pair (auditory nerves) are spread over the interior of the ear, and are sensible to the vibrations of the air. From the numerous ramifications of the ninth pair, come the nerves of the tongue, which give rise to the sense of taste. The general sense of feeling is situated particularly in the skin; and peculiarly in the points of the fingers. This sense is produced by a variety of nerves diffused over the skin, and those parts which are most sensitive are supplied with the greatest quantity of nerves, which form entire series of contiguous nervous *papillæ*; for instance, at the lips, the points of the fingers, &c. Thus, the action of the nerves is reciprocal from without inwards, and from within outwards—the first, because the impressions on the organs of sense are communicated by the nerves to the brain, and there form perceptions and feelings; the second, because the voluntary motions are produced by communications from the brain to the nerves, while the reproductive part of the nervous system quietly supports the whole machine, and, in a sound state of the body, is recognised only by the operation of the appetites, and by a general feeling of ease throughout the system, but, in a diseased state, gives rise to general uneasiness and pain. The power of the nervous system has no fixed point, but is variable, even in the same subject. In sleep, the activity of the cerebral system is impaired—that of the reproductive system heightened; therefore, in quiet sleep, the operations of the senses and the voluntary motions cease, while the activity of the organs of respiration and circulation, of digestion, secretion, and nourishment continues.

None of the nerves of the brain originate in the cerebrum or cerebel-

lum, but all arise from the *medulla oblongata*. This is a portion of the brain, situated at the base, and between it and the spinal cord. The olfactory, the optic, and the auditory nerves, give off no branches till they arrive at the organs which they are destined to supply. Thirty nerves on each side go off from the spinal cord, and all of them, like those of the brain, pass through bony canals. They are sent to the muscles of voluntary motion. It is necessary that the same communication should be kept up by the nerves, between the spinal cord and the parts to which its nerves are distributed, which is known to exist with regard to the brain. If the spine be fractured, so that the spinal cord is compressed, all the parts below the fracture are paralyzed. Sometimes the injury is in the lower part of the back, and the patient is only deprived of the use of his lower extremities; and though his recovery is hopeless, his life is not destroyed, and probably not shortened. In those cases, where the spinal cord is injured high in the neck, death does not immediately follow; and while life continues, the mental faculties are unimpaired.—[*Encyclopædia Americana*. *Haywards Physiology*.]



THE FIVE SENSES.

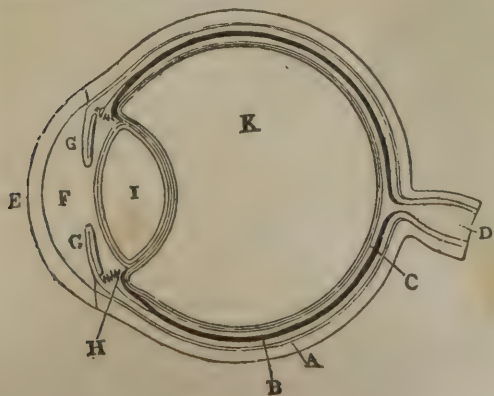
THE organs by which the senses of *seeing*, *hearing*, *smelling*, *tasting*, and *touch*, are produced, are the avenues through which alone the soul communicates with the external world. By these the child gradually learns the disregarded fact of its own existence; and when the little one becomes a man, aided by the powers of comparison, combination and moral perception, he *looks* abroad upon the boundless heavens, *listens* to the mingling melody of woods and fields, *inhales* the fragrant odors of a wayside flower, *tastes* the luscious berry or the cooling stream, *feels* the warm *touch* of southern winds, and *believes* what all these things declare,—that “God is;” and further, that God, as the Author of self-knowing beings, is in himself necessarily self-existent.

Without the external senses, the mind could acquire no knowledge and in the absence of all perception, would live a kind of living death—an unapprehending darkness—a night that “finds no dawn.” But God, when he said unto light—*BE*—“formed the eye;” and when he “made the firmament” as the vehicle of sound, his work was not complete till he had “planted the ear;” and thus with light we kindly have its enjoyment—vision, and with sound we have hearing; and the same also of our other faculties, each one as supremely good in itself, and supremely good in its relations; the mind is everywhere addressed by “dim miniatures of greatness ABSOLUTE.”

THE SENSE OF SIGHT.

The eye being that organ by which, through the medium of light, we become sensible of the forms and colors of objects, may be conveniently divided into two parts,—the coats of the eye, including the seat of sight, or that which receives the visual impression, called the retina, or expanded nerve; and the humors of the eye, the apparatus by which the rays of light are made capable of forming an impression on the retina, or proper organ of the sense.

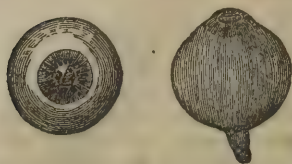
We shall explain these in the order best calculated for the easy and clear comprehension of our readers, and then proceed to describe the laws of vision, the motions of the eye, and the various contrivances by which it is defended against injury.



[Plan of the eye, seen in section. A, the sclerotic coat; B, the choroid coat; C, the retina; D, the optic nerve; E, the cornea; F, the aqueous humor; G, the iris; H, the ciliary processes; I, the crystalline lens; K, the vitreous humor.]

I. THE COATS OF THE EYE.

The eye, considered apart from the humors, may be regarded as a globular bag, composed of three coats, with the cornea, and several membranes which arise from them. These coats are called first, the **SCLEROTIC COAT**, giving form and strength to the whole organ; second, the **CHOROID COAT**, carrying the principal vessels of the eye; and, third, the **RETINA**, or expanded nerve, which, being the seat of vision, may be considered as the eye itself.



[Front and side views of the ball of the eye.]

1. THE SCLEROTIC COAT.

The sclerotic coat derives its name from its hardness. It is a strong tough membrane, close in its structure, and of the "density of tanned leather." It is the "outside coat" of the eye, and closely invests it on all sides except the front, which is covered by the cornea. The globular figure of the eye is preserved, and the delicate structures of the interior defended, by its strength and inelasticity; and being of a texture which is seldom diseased, it serves as a barrier against external inflammation.

2. THE CORNEA.

The cornea, or horny coat of the eye, is so named from its being formed of several firm transparent plates. It covers the front, and from its structure and functions might be called the window of the eye. It is colorless, and composed of the most sparkling transparency; between these a pellucid fluid is exuded, which, in proportion as it abounds or diminishes in quantity, gives to the eye the captivating brilliancy of life, or the clammy inexpressiveness of death. The cornea is so hard that in operating, the point of the needle will sometimes turn against it, but it nevertheless possesses great sensibility. Its hardness defends the eye from injury, its sensibility warns the mind of the presence of danger, and its colorless transparency permits an undiluted passage of the rays of light to the retina.

3. THE CHOROID COAT.

The choroid is the middle coat of the eye, and lies between the sclerotic coat and the retina. It is composed of two layers of mem-

brane, the outer one thickly covered with blood vessels, and the surface of the inner one adapted for the secretion of a peculiar mucous matter, called the *pigmentum nigrum*, or black paint of the eye. This black paint is spread over the whole interior surface of the eye, and is in immediate contact with the ramifications of the retina. "Its use," as Sir Charles Bell has elegantly explained, "is apparently to stifle the rays of light, after they have struck on the sensible surface of the retina; for we know



[The eye after cutting away the sclerotic coat and cornea, to show the vessels of the choroid coat; magnified.]

that blackness is owing to the absorption of light, as whiteness and color are to the reflection of it from the surface of bodies. The dark color of the secreted pigment of the choroid coat, is, in some measure, peculiar to those animals which see in the brightest light of day; but is wanting, or of a bright reflecting green, or silvery whiteness, in such as prowl by night. The natural conclusion is, therefore, that the pigmentum nigrum subdues the intensity of the impression, while the reflecting colors of the surface in animals which see in the night, strengthen the effect of the light on the surface of the retina, by repelling it. As fishes have the other provisions for seeing in an obscure light, they have also this of the reflecting surface of the tapetum; as it is a secretion of the villous (velvety) surface of the choroid, we see why it becomes somewhat deficient in old men, and sometimes wanting in the degenerate varieties of animals; when entirely deficient, the blood circulating in the vessels of the choroid coat, gives a livid redness to the reflections from the bottom of the eye.”*

4. THE CILIARY PROCESSES.

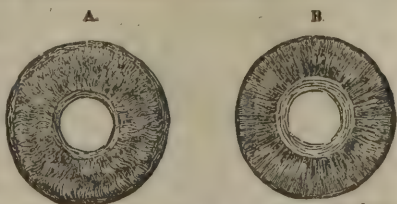
Adjoining and within the circle where the sclerotic coat joins the cornea, the choroid coat is folded backwards and inwards, in the form of a circular plaited fringe, the little flat threads of which are called the ciliary processes. Like the choroid, they are covered with the pigmentum nigrum, or black paint. They closely embrace the margin of the crystalline lens, and form round it an opaque blackened partition which absorbs all the side rays of light which might otherwise have disturbed the clearness of vision.



[Section of the eye, magnified, showing the ciliary processes, the pigmentum nigrum, the retina, and the choroid coat.]

5. THE IRIS.

The iris is a circular membrane, suspended before the crystalline lens, for regulating the quantity of light which it admits by an aperture in its centre, called the pupil. It is that colored disk which we see through the cornea, and which the uninformed regard as the eye itself. The color of this membrane gives what is called the “color of the eye;” and, from its variety and beauty, it has been named the iris. The color depends on the refraction of the light, as it falls upon the velvet-like surface of the membrane, and also upon the degree in which the black paint, which covers its back, is seen through it. In this way the



[A, the iris, magnified, seen from the front, showing the radiated muscle; B, the same from behind, showing the orbicular muscle.]

* Bell's Anatomy of the Human Body, vol. iii., p. 256.

greater or less transparency of the iris causes the numerous varieties of black and hazel-colored eyes.

The enlarging and diminishing of the pupil, according to the weakness or intensity of the rays of light, is one of the most admirable contrivances in the body, and is effected by the contraction or relaxation of the muscles of the iris.

The iris is composed of two sets of muscular fibres, numerous blood vessels, and a profusion of nerves. The first set of muscular fibres converge from the circumference of the iris to the circular margin of the pupil: these constitute the "radiated muscle." The second is a ring of fibres, which go round, and indeed form the pupil; it is called the "orbicular muscle." When light enters the eye in greater quantities than is necessary for distinct vision, the excited retina gives warning of the danger, and the nerves immediately stimulate the orbicular muscle to contract, and the radiated one to relax, by which means the size of the pupil is instantly lessened, and a smaller quantity of light admitted. But when in twilight or shady and dark situations, the retina requires more light for the transmission of a well defined image to the brain, a relaxation of the orbicular, and a contraction of the radiated muscle takes place, and the pupil is thereby enlarged, if necessary, to its full extent.

6. THE RETINA.

The retina, which is the immediate seat of vision, is an expansion of the optic nerve, and forms the innermost of the three coats of the eye. It consists of a thin membrane, upon which is spread a vast number of veins, arteries, and absorbent vessels, and upon these the filaments of the optic nerve are expanded in a network of exquisite delicacy. It does not adhere, but lies in close contact with the choroid coat, and is of the same extent. The vascular and nervous layers of the retina terminate when they reach the edge of the crystalline lens, but the membrane passes onwards over the lens, and forms part of its capsule.

II. THE HUMORS OF THE EYE.

The humors of the eye may be compared to the glasses of the telescope, and the coats to the tube which keeps them in their places. They are three in number.

1. THE AQUEOUS OR WATERY HUMOR.



The aqueous humor is a clear colorless fluid resembling pure spring water. It occupies the space between the cornea and the crystalline lens. Its chief use appears to be, by distending to preserve the proper curvature of the cornea, and to allow the undisturbed motions of the iris which floats in it.

[Section of the eye, magnified, showing the crystalline lens, in its proper situation between the aqueous and vitreous humors.]

2. THE CRYSTALLINE HUMOR, OR LENS,

The crystalline is the second humor of the eye, and lies immediately behind the aqueous. In shape it resembles a very powerful magnifying glass, flattish in front, but very convex behind. It is in the highest degree transparent, and of considerable density; the centre harder than the circumference. It is held in its situation by a capsule, assisted also by the ciliary processes, and the membrane of the retina. This structure powerfully adapts it for the discharge of its peculiar and important office, that of accurately conveying the rays of light to the nervous surface of the retina.

3. THE VITREOUS OR GLASSY HUMOR.

The vitreous humor fills the great cavity of the eye. It is of a thick gummy consistence, and is traversed in every direction by numerous pellucid membranes, which support and strengthen it. The chief use of this humor is apparently to keep the crystalline at the proper distance for causing the rays of light to strike the retina, and also to keep the retina spread smoothly before the light.



[The vitreous humor and crystalline lens, magnified, with the stains of the pigmentum nigrum left by the ciliary processes.]

LAWS OF VISION.

We now proceed to describe the subserviency of the several parts of the eye to the production of vision; but, to make the matter quite plain, it will be necessary to consider, briefly, the constitution of light; and, as far as sight is concerned, the laws to which it is subject.

1. NATURE AND PROPERTIES OF LIGHT.

Light is believed to be a very subtle *fluid*, diffused through all nature. A dark room, therefore, contains as much *light* as if the noonday sun shone through its windows; it exists in a *latent* or hidden form; and if, in the midst of the darkness of the room, a flint and steel be struck together, the heat, generated by the percussion, will instantly make the hidden light visible. It follows from this, that light exists independently of the sun; which, in the manner of a lighted candle, and many other causes, merely excites it into visible existence. This circumstance, while it explains many optical difficulties, gives a strong and charming proof of the inspired truth and scientific accuracy of the Mosaic history of the creation, in which it is declared, that light was created *before* the sun.

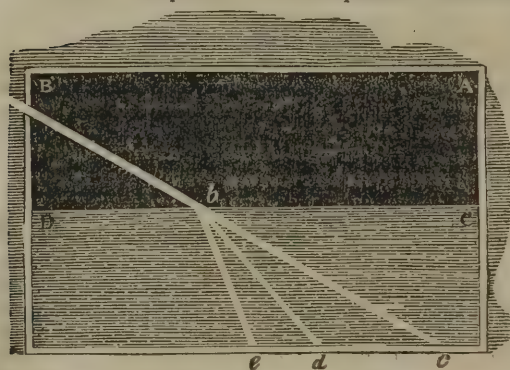
Light consists of separate atoms, which travel in straight lines or rays, at the rate of eleven millions, seven hundred thousand miles in one minute of time. It is continually sent forth, in every direction, from all points of luminous or illuminated bodies. Trees, buildings, seas, animals, rocks, all bodies, in short, whether natural or artificial, which are not luminous in themselves, are made visible by light, which comes from (or, from a latent state, is made sensible by) the sun, or other sources of light; and the light which they throw off, or reflect, is invariably of the same color as themselves, although the light which renders them visible is white. Thus it has been observed, by Sir David Brewster, the greatest optical

philosopher of this or any age, that, "if we hold a white card before a rosebush, the surface of the card will appear of its usual whiteness; but if we place this card at one end of a box, shut up on all sides, and if having made a pin-hole in the side opposite the card to admit the light from the rosebush, we look through another hole at the card, we shall see upon the card, and opposite each rose, a patch of red light, and opposite each green leaf, a patch of green light. These patches of color constitute a picture of the rosebush turned upside down, which, though not very distinct in the outline, will yet be easily recognised. If we enlarge the small hole opposite the card, the picture will become more indistinct, and the colors more faint; and when the hole reaches a certain size, the red light from the roses will fall upon the same parts of the card as the green light from the leaves, and the card will appear of its original whiteness."

2. REFRACTION OF LIGHT.

A ray of light, in passing through the air, moves in a straight line; but if it be interrupted in its course, by being made to pass through water, oil, glass, precious stones, or a thousand other substances, which it is needless to enumerate, it will, from the difference of constitution between them and the atmospheric air, change its direction; and this alteration in its path is called *refraction*, from a Latin word, which signifies *breaking back*, the ray being broken back or refracted from its straight-forward course.

To make this plain, let A B, represent a dark box with a hole pierced



in its side at B; admit a ray of light, *a*, from a burning candle, so that it may fall on the bottom of the box at *c*. Mark this point, and fill the box to the level C D, with water, when it will be seen that the point of light has shifted itself to *d*, and that the change has been effected by the refraction or breaking back

of the ray of light from the point *b*, where it touches the water.

This change in the direction of the ray may be made still more evident by using spirits of wine, or a solid piece of glass, in place of the water. With the latter medium it would be refracted to *e*.

3. REFRACTION OF LIGHT BY LENSES.

A lens is usually a circle of glass having its surfaces ground into the following or intermediate shapes.



Light, in its passage through these glasses, would be refracted in proportion to their greater or less degrees of convexity or concavity; but in passing through a plane lens, as shown in the cut, it would proceed in its course without deviation.

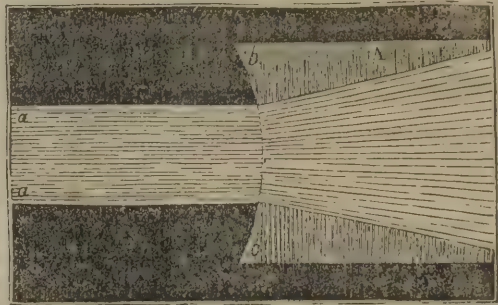
A concave lens would however cause the transmitted rays of which it is composed to widen or diverge; and this it does, according to strict mathematical principles.

The convex lens, which, (for our present purpose, it is important to observe,) instead of diverging, or suffering the rays to pass in straight lines through, causes the rays to contract or converge to a point in which they all meet, and which is called the focus of the lens.

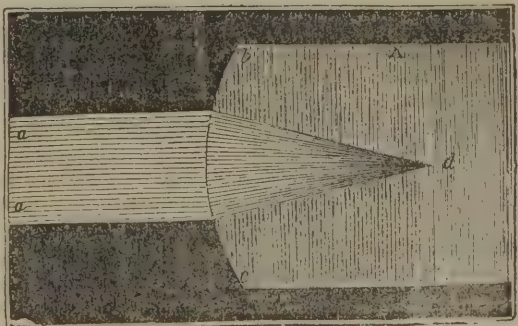
Upon the property thus possessed by lenses of altering the course of luminous rays, and especially that of the convex lens, in converging them to a focus, the faculty of vision, as we shall presently see, in a primary degree depends; for it is by this means that the light, from visible objects, is collected in the eye, and thrown upon the expanded nerve or retina.



[A, a solid oblong piece of glass; a, a, a stream of light which strikes the surface of the glass, b, c, and which, being perpendicular, suffers it to pass through without refraction.]



[A, a solid oblong piece of glass; a, a, a stream of light which strikes the surface of the glass, b, c, and which, being concave, causes the light in its passage through it to diverge.]



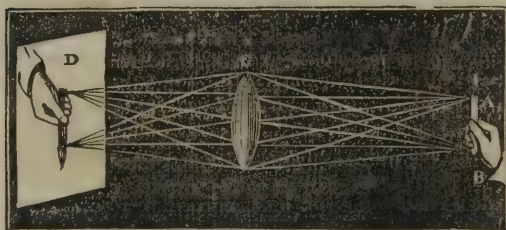
[A, a solid oblong piece of glass; a, a, a stream of light which strikes the surface of the glass, b, c, and which, being convex, causes the light in its passage through it to converge.]

4. FORMATION OF IMAGES BY LENSES.

In the beautiful experiment of the card and the rosebush, mentioned in section 1, it was shown how an imperfect image might be formed by placing a small hole between the bush and the card, and shutting out all the external light. But if, in the place of the hole, a double convex lens had been used, as in the following diagram, a perfect image of the object would have been formed.

The principle upon which the image is formed is this:—

We have stated that light is continually sent forth in every direction from all points of luminous and illuminated bodies; and that the light thrown off by illuminated bodies is invariably of the same color as them-



selves. Now, in the illustration before us, rays of light pass from the candle and the hand A B, and falling upon the lens C, are conveyed to the paper D, which is, in consequence, illuminated with an image of the object,

between which and its original there is necessarily a perfect coincidence of form and color.

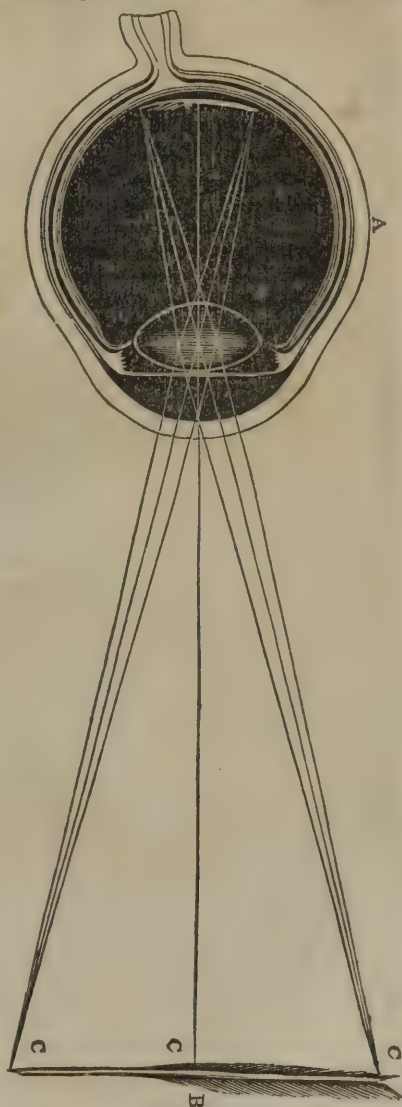
5. FORMATION OF IMAGES ON THE RETINA.

It was not suspected, till the year 1575, that the images of objects were formed on the retina in the same way as those of the rosebush described, and the hand and candle exhibited in our illustration. It was then that Maurolycus, a distinguished teacher of mathematics at Messina, in a treatise *De Lumine et Umbra*, first demonstrated that the crystalline lens of the eye collects the rays of light from surrounding objects, and throws them upon the retina. About the same time Joannes Baptista Porta, of Naples, invented the *Camera Obscura*, by which he gave great popularity to the discoveries of Maurolycus. His experiments with this instrument convinced him that vision must be performed by the passage of light into the eye, and not by "visual rays" proceeding from the eye, as Euclid, Aristotle, and their unthinking successors taught. But when he says that the eye is a *camera obscura*, and the pupil the hole in the window shutter, he was so far mistaken as to suppose that it was the crystalline humor which corresponded to the wall that receives the images; nor was it discovered, till the year 1604, that this office was performed by the retina.

These remarks prepare us by anticipation to consider the theory of vision, which, divested of all technicality, and reduced to its simplest method of representation, is shown in the following diagram:—

Let A (see cut on next page) represent an enlarged figure of the eye, and B a pen, the exact form, color, and distance of which the eye perceives in the following manner:—The pen throws off the rays of light C, by which it is illuminated, from every part of its surface, and in every direction: a portion of these rays fall upon the curved surface of the cornea, by which they are refracted from their straight-forward course, and, passing through the aqueous humor, enter the chamber of the eye, through the pupil, and fall upon the crystalline lens; there they undergo a still

greater refraction, and are converged to a number of angular points or focuses of condensed light on the surface of the retina, which is thereby impressed with an inverted picture of the pen, from which the rays came. The image thus delineated upon the retina, is conveyed by an unknown process to the brain, when the *presence* of the object is perceived. We say *presence* only of the object is perceived, because the faculty of distinguishing form, color, and distance, is a mental operation, totally distinct from simple vision, and depends upon the united exertions of the memory and the powers of comparison and combination. This being a very refined process, and one not of instinct, but of acquirement, is learned only by long process. We as much learn to see as we learn to walk; and, separate from experience, the eye conveys as little information to the mind as the pages of a foreign book, the language of which is not known. In the one case we should see without seeing, as in the other, we should read without reading.



That true sight is the result not merely of vision, but of the combined powers which we have described, is strikingly exemplified in the account given in the Bible of the poor man who had been blind all his days, and who, when Christ had graciously restored him to sight, exclaimed, that he saw "*men as trees walking.*" The fact being, that his eye, in the performance, for the first time, of the simple act of vision, was not aided by an experienced mind, and, consequently, could not, by an act of memory, compare or combine the impressions on the retina. The man, therefore, could not distinguish men from trees. This view receives ample confirmation from the daily experience of the hospitals, where similar cases constantly occur. Sir Everard Home, in his *Comparative Anatomy*, cites the cases of two blind boys who were restored to sight, by the operation of couching. One boy, on recovering

his sight, said that the doctor's head touched his eye; and he could not tell its form. The third day he saw several gentlemen, but could not describe their figures.

With the second boy, ten minutes after the restoration of sight, the following experiments were made:—A round card, of a yellow color, one inch in diameter, was placed at the distance of six inches. He said it was yellow, and if he might touch it he could tell the shape; but this being refused, after considering it, he said round. A blue *square* card he called blue and *round*. A *triangular* one he called *round*. He was asked if objects touched his eye? he said no; but he had no idea of their distances. He was delighted at seeing, and said it was so pretty even to see the light.

6. DIRECTION OF VISIBLE OBJECTS.

The mind, in perceiving any point of an object, (that of A, the pen's point, for example,) receives the rays by which it is made visible at different degrees of obliquity; but, notwithstanding the difference of these degrees, the object is seen only in the direction of the central ray A B; and



this is always perpendicular to the retina. Now the surface of the retina being of a spherical form, it follows, that these rays being perpendicular to it, must invariably pass through a point which is the centre of the curve of the retina, and which is, therefore, called the *centre of visible direction*. This centre is a fixed point in the vitreous humor, and as it never changes its place, however great may be the rotation of the eye, it is evident that it must be the same with the centre round which the eye rolls when it is in motion. It results from this coincidence of the two centres, that the unvarying stability of the objects at which we look is preserved.

7. CAUSE OF ERECT VISION.

The humors of the eye acting like a convex lens, a picture of the object is painted on the retina in an *inverted* position. To young and uninformed persons this inversion of the image makes the cause of erect vision a subject of much difficulty, and by some of the old philosophers it was considered as one of the mysteries of nature. But the law of visible direction makes the whole a matter of easy comprehension. It will be observed, that the rays of visible direction cross each other at the point or centre of visible direction; those from the lower part of the picture go to the upper part of the object, and those from the upper part of the picture go to the lower part of the object; and thus when the mind would perceive the top of an object, it refers from the bottom of the picture *upwards*, and when it would perceive the bottom of an object, it refers from the top of the picture *downwards*, whereby a true notion of the erectness of objects is obtained (as, indeed, it only can be) by means of an inverted picture.

8. ACCOMMODATION OF THE EYE TO DIFFERENT DISTANCES.

The rays by which vision is performed in reading a book, or paper, make, in falling upon the eye, a much greater angle than those would do

which fall upon the eye in looking at a distant landscape; and this difference in the obliquity of the rays is followed by a difference of the degrees in which the two sets of rays are converged to a focus. The rays from the "Guide to Knowledge," for instance, as they would form a greater angle, would also be converged to a focus sooner than those from the distant landscape; and, consequently, if the retina was so situated as to receive the focus of rays from the book, the focus of rays from the distant landscape would be formed beyond it, and would therefore confound the eye with an indistinct image; but if, on the contrary, the retina was so adapted as to receive the focus of rays from the distant landscape, that from the book would not reach it, and would therefore be invisible. To meet these difficulties, the eye possesses the power of adjusting its different parts in such a manner to the distance of the different objects at which it looks, as always to cause the visual rays to converge to a point on the retina. These adjustments consist chiefly in an alteration of the convexity of the cornea, and a movement of the crystalline lens nearer to, or farther from, the pupil, by which the axis of the eye is made longer or shorter, and the degree of convergence greater or less, as the occasion may require. These beautiful operations by use become involuntary, although they still continue under the dominion of the will, and can be performed or not at pleasure, as the reader may at this moment try for himself, by letting his eye, as he looks at the printing, relax into a state of repose, when the letters will immediately become indistinguishable, and appear as they do to an aged person. This state of repose is one natural to the eye, and in which it is adjusted to long sight, a faculty which most old persons possess; for we have observed that they can commonly distinguish all that to the strongest eye is visible, of a ship in the horizon, while at the same time they are totally unable to read the letters of a book.

9. CAUSE OF SINGLE VISION WITH TWO EYES.

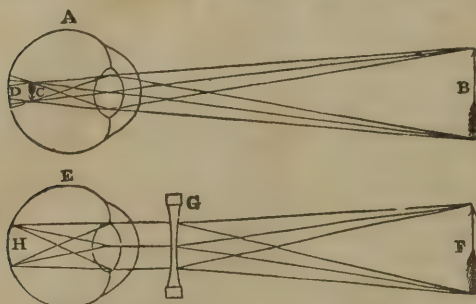
Much time has been wasted and great ignorance exhibited, in the discussion of this subject; but as we now live in an age when an appeal to facts alone is allowed in the settlement of a proposition, it becomes one of very easy solution. By the aid of the straight muscles of the eye, we can direct the axis of each eye, so that when prolonged they may meet in any desired point beyond the distance of about six inches. Let this desired point be a lighted lamp at the end of a dark gallery, and let us direct our eyes to the lamp—a picture of it would then be formed on the retina of each eye; but because the lines of visible direction from any two corresponding points of the pictures meet on the one real point of the object, the two pictured points must of necessity be seen as one point; and the collection of points forming the picture of the lamp in one eye, will exactly coincide with the collection of points forming the picture in the other eye.

10. CAUSE OF LONGSIGHTEDNESS.

Old persons are usually longsighted: that is, their eyes lose the power of adjusting themselves to short distances. This afflicting disability usually arises from a flattening of the cornea, and from a relaxation in the structure of the crystalline lens, by which its power of acute refraction is lessened.

1. CAUSE OF SHORTSIGHTEDNESS.

Shortsightedness arises from causes exactly the reverse of those which occasion longsightedness, namely, too great a convexity of the cornea, and an excessive density in the structure of the crystalline lens,



[A, a shortsighted eye; B, an arrow which it attempts to perceive, but is prevented by the convergence of the visual rays to foci at C, before they reach the retina at D.

E, the same eye, similarly situated, showing how, by the intervention of a concave lens, G, the rays are diverged, and the image of the arrow, F, accurately converged to the retina at H.]

converges the spreading rays to a focus on the retina; and shortsightedness, in like manner, by a concave lens, which diverges the rays, and prevents them from coalescing in a focus, before they reach the retina.

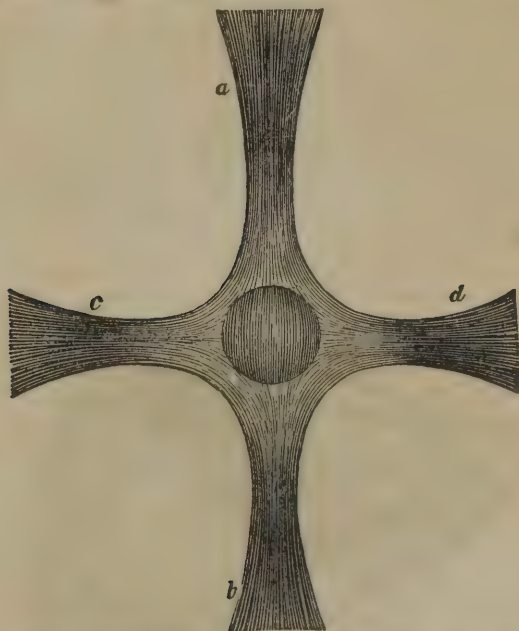
MOTIONS OF THE EYE.

In looking at a telescope, our attention is arrested by the ease with which it is turned, at the will of the operator, from one object to another, and we readily perceive that without the aid of a number of adjusting wheels and screws, by which its motions are effected, the instrument itself would have been comparatively useless. It is just the same with the eye. We have seen that it is admirably contrived in all parts for the production of vision, and we shall presently find that it is no less admirably furnished with the necessary apparatus for making its powers constantly available to our wants and wishes. Dr. More, in his "Antidote against Atheism," has quaintly, but prettily, said, that "the eye in its structure is so perfect, that the reason of an atheist ought easily to have rested on the exhibition of its marvels, and without further inquiry, have passed from admiration of the contrivance, to worship of the *Divine Contriver*." But willing to accumulate the argument, he goes on to observe, that "man being able to move his whole body upward and downward, and on every side, might have unawares thought himself sufficiently well provided for; but nature hath added *muscles* also to the eyes, that no perfection might be wanting; for we have often occasion to move our eyes when convenience requires that our head should remain unmoved, as in reading, and in viewing more particularly an object set before us, by transferring the axis of our eyes all over it; and that this may be done with the more ease and certainty, she hath furnished this organ with no fewer than *six* muscles, to move it upward, downward, to the right and left, obliquely and round about."

These remarks will prepare the reader to consider in detail the "admirable particulars" of the muscular apparatus for moving the eye.

The eye, in its natural position, is placed in a bony chamber called the "*orbit*," or, more commonly, the "*socket*," where it rests in a bed of fat, so soft and yielding as to allow it a free rolling motion in any direction. The motions are produced by four straight and two oblique muscles.

1. **RECTUS SUPERIOR ATTOLENS OCULI**—Latin terms signifying *the straight raising muscle of the eye*. This muscle starts, or, in anatomical language, *arises*, from a portion of the sphenoidal bone in the bottom of the chamber of the eye, and passing forwards and *upwards*, is fastened, or "*inserted*" into the sclerotic coat, at the *top* of the eyeball. Its use is, by contracting in its length, to turn the front of the eye upwards, as in the act of devotion, or the expression of scorn, from which latter circumstance it was called by the old anatomists, "*superbus*," denoting a high look, and haughty disposition.



[The cornea, with the four straight muscles of the eye spread out, showing the junction of their tendons with the sclerotic coat. *a*, the attolens; *b*, the deprimens; *c*, the adductor; *d*, the abductor.]

2. **RECTUS INFERIOR OCULI**—Latin terms signifying *straight depressing muscle of the eye*. Arises from the sphenoidal bone in the bottom of the eye, and passing forwards and *downwards*, is inserted into the sclerotic coat, at the *bottom* of the eyeball. It will be observed that the direction of this muscle is exactly the opposite of the attolens, and, as might therefore be inferred, its use is exactly the reverse. It turns the front of the eye downwards, and has been called the "*humilis*," as betokening humility, the expression which its action produces.

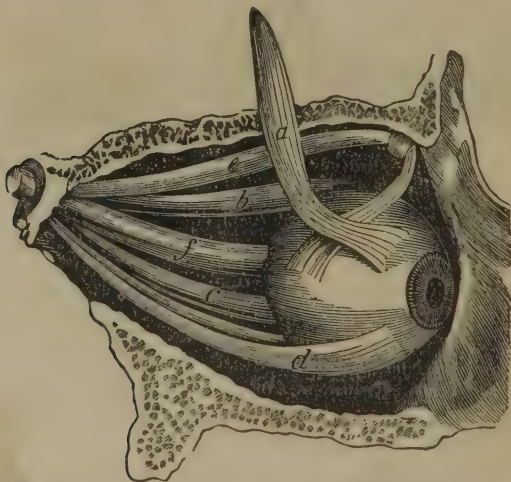
3. **RECTUS ADDUCENS OCULI**, or the **ADDUCTOR**—Latin names signify-

ing the straight muscle which “brings to,” or turns inward the ball of the eye. Arises like the preceding, from the bottom of the chamber of the eye, and passing forwards towards the *inner* angle of the eyelids, is inserted into the sclerotic coat on the side next the nose. Its use is to roll the front of the eye inwards, and was once called, from this circumstance, “*bibitorious*,” a Latin word signifying a drinker, because in the act of drinking we turn the eye inwards to examine the fluid.

4. RECTUS ABDUCENS OCULI, or the ABDUCTOR—Latin names signifying the straight muscle which “leads away,” or turns outwards the ball of the eye. Arises from the bottom of the orbit, and passing forwards towards the *outer* angle of the eyelids, is inserted into the sclerotic coat, on the side of the eyeball next the temple. In action it rolls the front of the eye outwards, or from the nose, and was called by our fanciful forefathers, “*indignabundus*,” a Latin term, meaning “enraged,” and denoting it as the muscle by which are produced those sidelong looks which express anger and scornful resentment.

These four muscles, at their origin, surround and protect the optic nerve, where it enters the chamber of the eye; and at their termination expand into four broad tendons, which belt the eyeball, and add greatly to its strength.

1. OBLIQUUS SUPERIOR OCULI—Latin names, signifying the principal, sloping, or “sideway,” muscle of the eye. It has also been called “*longissimus oculi*,” because of the greatness of its length, compared to the second oblique muscle, which, from its comparative shortness, was named *brevissimus oculi*.



[Side view of the muscles of the eye in their natural positions. *a, b, c, d*, the four straight muscles; (*a* is turned up to prevent the others from being hidden.) *e*, the great oblique muscle; *f*, the optic nerve. The second oblique muscle is not shown, but its situation may be inferred.]

This muscle is, in many respects, one of the most interesting in the body; and, as it offers a brilliant example of the mechanical wisdom of the CREATOR, demands our closest attention. It arises from the margin of the hole in the bottom of the orbit which transmits the optic nerve

between the four straight muscles. From thence it runs round the ball of the eye, slantwise, to the great *canthus*, or inner angle of the eyelids, in the side part of which there is a cartilaginous ring, called the *trochlea*, through which it passes like a rope over a pulley, and, turning backwards, it proceeds between the first straight muscle and the ball of the eye, and increasing in breadth, it is inserted into the sclerotic coat on the back part of the ball of the eye, near the abductor. When it acts, it rolls the eye about its axis, towards the nose, and at the same time draws it forwards, and turns the pupil downwards.

The learned Dr. Paley, in speaking of a muscle of the same structure, which, in animals, assists in drawing a cleaning membrane over the eye to remove dust or other impurities, makes some valuable remarks, which, as they illustrate our subject, we shall quote. He says, after describing its "marvellous mechanism:"—"a muscle passed through a loop and inflected, as if it were round a pulley. This is a peculiarity; and observe the advantage of it. A single muscle, with a straight tendon, which is the common form, would have been sufficient if it had had power to draw far enough. But the contraction necessary to draw the membrane over the whole eye, required a longer muscle than could lie straight at the bottom of the eye. Therefore, in order to have a greater length in a less compass, the cord of the muscle makes an angle, which perfectly answers the required end." Now this is also strikingly true of the great oblique muscle of the human eye—the end, and the means used for its accomplishment, being, in both cases, precisely the same; for Cowper, in his *Myotomia Reformata*, has remarked—"When any of the straight muscles contract, they would draw the ball of the eye inwards by some equal force," which is exactly what the great oblique muscle, assisted by its lesser companion, which we shall presently describe, is admirably qualified to perform. The superior strength of the straight muscles acting, be it observed, rectilineally, and with a short distance, is thus beautifully counterpoised by a simple mechanical arrangement, in which the power of a weak muscle is doubled, and the disadvantages arising from the obliquity of its course and the awkwardness of its situation, are actually made to assist the very operations which they might have been expected to impede.

2. *OBLIQUUS INFERIOR OCULI*, or the *small sloping muscle of the eye*. It arises from the lower edge of the orbit, on the side next the nose, and passing obliquely and somewhat transversely backwards, it slips under the *deprimens*, and, spreading into a flat tendon, is inserted into the back and outer part of the sclerotica, directly between the *abducens* and the optic nerve. Its office is to roll the eye about its axis from the nose, and, at the same time, to draw it forwards, and direct the pupil upwards.

EQUILIBRIUM OF THE MUSCLES OF THE EYE.

This subject has been so concisely and pithily discussed by Durham, in his *Physico-Theology*, that we shall content ourselves by simply extracting a portion of his remarks:—

"Nothing," he says, "can be more manifestly an act of contrivance and design than the muscles of the eye, admirably adapted to move it any and every way; upwards, downwards, to this side or that, or howsoever we please, or there is occasion for, so as always to keep the parallelism of the eye, which is necessary to true vision. For the performance of which service, the form, the position, and the due strength of each muscle

is admirable. But what is most to be here noted is the exquisite equilibration of all the muscles, effected partly by the equality of the strength, which is the case of the *adductor* and the *abductor*, partly by their peculiar origin, or the addition of the *trochlea*, which is the case of *attolens* and *deprimens*. By this so curious and exact equilibration, not only unseemly contortions, and incommodious vagations of the eye are prevented, but also it is able with great readiness and exactness, to apply itself to every object.

"Seeing, then," says Ray, in his *Wisdom of God in the Creation*, "the eye is composed of so great a variety of parts, all conspiring to the use of vision, whereof some are absolutely necessary, others very useful and convenient, none idle or superfluous; who can but believe that *this organ was designed and made purposely for the use for which it serves?*"

DEFENCES OF THE EYE.

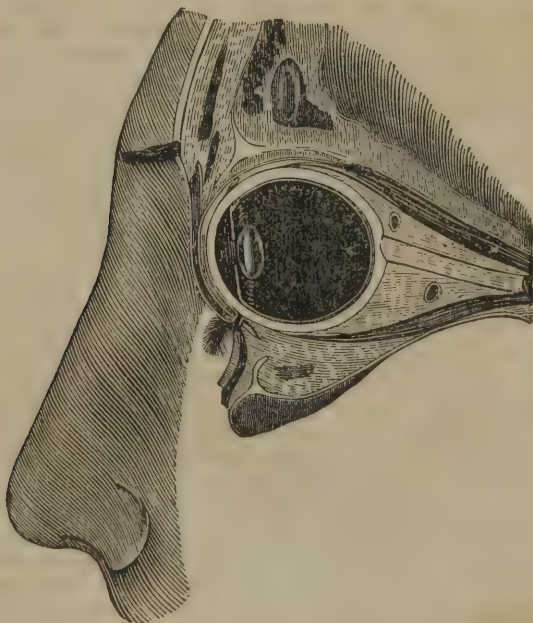
The "loving kindness" of the Creator is beautifully exhibited in the provisions he has made for the preservation of life amidst the multifarious dangers which hourly threaten it with extinction. To notice only a few of the more obvious instances, as they float on the surface of his oceanic wisdom, we may hold up to admiration, the well-compacted strength, the wind-like fleetness, and the ready sagacity, which combine to give the lion the supremacy, alike of forests, deserts, and cultivated plains. An impenetrable shell saves the torpid and slow-going tortoise from the crush of the elephant's foot; and, in the hour of need, an armature of spines, like threatening spears, couching in every direction, preserve, by intimidation, the weak and unoffending hedgehog from a host of powerful assailants. Upon the heaths the furze-bush stands as a fortress to the gentle linnet against the pursuit of the rapacious hawk; and, in tropic lands, the pendant nests of the loxia and Baltimore birds swing from the end of graceful boughs, like the bunches of *sour* grapes in the fable, to set on edge the teeth of the wily serpent, who would fain destroy the tender broods, but dares not trust his weight to the fragile branches. In our retired streets, when a family of loquacious sparrows squat down to discuss their roadside morsels, a lonely fellow, chosen from the party, sits high upon the corner of some adjacent spout, as a sentinel, to warn them of a coming stone or an advancing cat; and when the plenitude of summer flowers, and the insects which make each opening bud a nation, are exhausted—when the harvest-fields cease to yield their increase, and the gray mists of coming winter clothe the autumnal eves with sadness, then millions of the feathered tribes, borne on strong aerial wings, cross seas and deserts to seek afar off a warmer sun and richer lands. Innumerable genera of beetles—"the creeping things of the earth,"—covered with thick plates of shelly armor, return hollow sounds, instead of sweet morsels, to the eager bills of hungry birds. One of these "armed knights," called the bombardier, puffs at his enemies a cloud of poisonous smoke, and walks quietly away in the very face of half suffocated foes. But to make an end of examples, which are infinite in number as they are infinite in wisdom, we shall only notice the cuttle-fish, which, in the eyes of ignorance, would appear to be a very helpless creature, but is, in reality, as well defended as a king by loyal subjects. This inhabitant of the waters, the moment he is menaced by any danger, discharges a quantity of intensely black fluid, in the centre of which he rests, and by which he becomes suddenly invisi-

ble. This fluid forms the basis of Chinese, or, as it is more commonly called, Indian ink.

The conservative providences of God are, however, no less evidenced in the preservation of particular organs, and little and, apparently, insignificant parts of animals: thus, the heart is preserved from rupture by the great strength of its twisted fibres, and from external injury by the breast bone and ribs; the bowels from corrosion by a soft covering of mucous; the teeth from too rapid wear, by their enamel; and the eye from a multitude of distressing evils, by various admirable contrivances, which it will now be our business to describe.

1. THE ORBIT OF THE EYE.

The first defence of the eye consists in its lodgment within the walls of a strong bony chamber, called the orbit. This cavity is composed wholly and in part of seven curvilinear bones, severally called *os frontis*, *os sphenoidale*, *os ethmoides*, *os maxillare*, *os malæ*, *os unguis*, and *os palati*.



[Section of the eye, showing its situation in the orbit.]

The edge or rim of the cavity is formed by the *os frontis*, *os maxillare*, and *os malæ*; and the rest of the bones contribute to form the bottom and sides. The bottom is perforated by the *foramen opticum*, an angular hole, to give passage to the optic and other nerves, bloodvessels, &c. The whole chamber is lined by a continuation of the *dura mater*, a membrane which protects the brain.

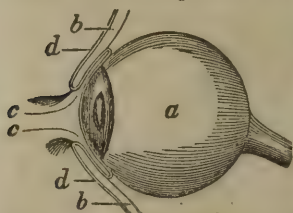
The two orbits, in their natural positions, might be compared to two funnels, placed horizontally, side by side, opening with their mouths outwards. In these fastnesses the eyeballs are most effectually preserved

from external violence. Concussions are dispersed in the joinings of the bones, which, had the orbit been formed of a single piece, instead of seven, might have often suffered fracture from their influence. The situation of the orbits in contributing to the safety of the eyes is also most "express and admirable;" for, be it observed, they stand centrally between the projections of the nose, brow, and cheek bones, which, in cases of a fall or a blow, receive the entire shock.

2. THE CURTAINS OF THE EYE.

It is necessary that the interior of the socket of the eye should be guarded from the intrusion of dust or other extraneous matters. This is ingeniously effected by a curtain-like membrane, called the *tunica conjunctiva*.

This membrane, which is also called the *adnata*, is a reflected prolongation of the skin of the eyelids. Before, however, we proceed to describe it, the reader will please examine the following diagram, by which he will acquire a clearer idea than words can convey of its form and situation, and, consequently, be better able to understand the remarks that follow. Let *a* represent the eyeball, and *b b* the upper and lower lids.



Now, it is plainly manifest that some additional contrivance is wanting to prevent dust or other bodies working their way through passages at *c c*, between the ball and the lid, into the socket of the eye, where their presence would excite insufferable and incurable pains. To meet this exigency, we find that the common skin of the eyelids, *d d*, after covering their respective edges,

goes inwards a little way between the lid and the ball, and then turning backwards, is reflected over the surface of the cornea, where, to prevent the obstruction of vision that would otherwise follow, it becomes *perfectly transparent*. We think that no part of our marvellous bodies exhibits a more pleasing instance of the economy, wisdom, and tenderness of the Creator. The economy of this arrangement, is evidenced in the circumstance of no new organ having been created for the purpose—it is an adaption of the skin of the eyelids. Its wisdom is shown in the simplicity of its design, in the unerring truth with which its functions are performed, and in the singular circumstance that the difficulty of the case had to be overcome by one of greater magnitude—that of passing the skin of the eyebrows across the very pupil. But God, whose "understanding is infinite," with a majesty which is heightened rather than diminished by the littleness of the objects, steers the course between pain, on the one hand, and blindness on the other, by making the membrane, where it covers the pupil, "*transparent*." And the tenderness of his care is shown in the fact, that without this little but difficult contrivance, we could not long have used our eyes; but with it we can live our threescore years and ten without annoyance, even from the smoke and dust of the city.

3. THE EYELIDS.

These are composed of the common integuments, with a cartilaginous margin to give them shape, and muscular fibres to give them motion. The cartilage which forms the margin of the lids, is called the *tarsus*, and, like all the parts of the eye, is an exquisite piece of mechanism. It

lies like a hoop on their edges, and, from its stiffness, keeps them of a circular figure, so that they close neatly over the eye, and meet with the most perfect accuracy.

The upper eyelid only is moved for the admission of light to the eye; it is raised, or, in common language, "the eye is opened," by a muscle called the *levator palpebræ*. In "shutting the eye," the closure of the lids is effected by a muscle called *orbicularis palpebrarum*, which acts with great power on both eyelids.

Immediately within the edges of the eyelids, beneath the surface, a number of beautiful little glands are imbedded, called the *meibomean glands*, and from these, about twenty or thirty ducts, or pipes, open upon the edge of each eyelid. In the glands a white greasy matter is secreted from the blood, and slowly poured by the ducts upon the edge of the lids, which they defend from being inflamed by the tears, and assist also in keeping them together during sleep. It is this matter, in a dried state, which we pick from the inner corners of the eyes, on arising in the morning.

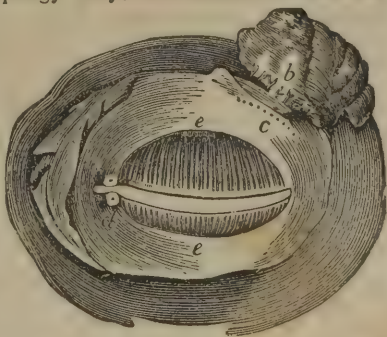
Upon the outer edge of the eyelids, fringes of hair, called the lashes, defend the eye from insects, and are of constant use in mitigating the "too fierce impression" of the sun's light.

4. THE SECRETION AND DISTRIBUTION OF TEARS.

Tears, which equally express our joys, sorrows, pity, and affections, flow more constantly than we are accustomed to consider. Like spoiled children, we may literally be said to be "always crying;" for, whether asleep or awake, the brilliant tears pursue their crystal course in a perpetual stream over the eyeball, moistening its surface, and washing away its impurities. This, as a defensive provision, is that which we have now chiefly to consider.

5. THE LACHRYMAL GLAND.

The lachrymal gland is a small spongy body, of a flattened form, seated in the hollow of the bone in the upper and outer part of the orbit, just beneath the outer end of the brow. Its office is to secrete the fluid of the tears from the blood, and to discharge it over the surface of the eyeball. This it performs by means of a number of little pipes or ducts, which proceed from it, and open upon the inner surface of the upper eyelid. We have already described, at section 2, the contrivance by which particles of dust, &c. are kept from the inner chamber of the eye; but we have now to explain the use of tears in cleansing the surface of the eyeball from similar impurities.



[The eyelids separated and viewed from behind; *a*, the lachrymal gland; *b*, the ducts from ditto; *c*, the mouths of these ducts; *d*, the puncta lachrymalia; *e*, the meibomean glands, described in section 3.]

When motes rest upon the eyeball, they are, by "winking," immediately wiped off into the channel of the lower lid, when the exquisite sensibility of the membrane by which it is lined, excites the lachrymal gland to a

copious discharge of tear water; the eye is suffused, and the offending atoms floated to the inner angle of the lids, and discharged. But here the remedy threatens to become a disease, and an apparatus is wanted for draining off the superfluous water, which, if it were left, would dazzle the sight, inflame the lids, and cause the lashes to rot at their roots and fall. This would at once have made man a miserable creature, and, therefore, God, who, as Paley remarks, has made no organ to irritate or give pain, but all for pleasure and convenience, has, in this instance, made a beautiful provision for the *defence* of the eye in the creation of—

6. THE PUNCTA LACHRYMALIA, AND THE LACHRYMAL SACK AND DUCT.

The puncta lachrymalia are two small holes, placed at the inner angle of the eyelids, forming the mouths of a double canal (canalicula lachrymates) or duct for draining off the tears from the eye into the nose.



[The eyelids viewed from before; *a*, the canalicula lachrymates; *b*, the lachrymal sack.]

The lachrymal sack is a bag of an oval shape, fixed to the end of a double canal, and lies in a depression of the nose bones. It terminates in a tube, called the duct, which passes through a hole *made for it* in the nose bones, and opens into the nostril. The manner in which this apparatus acts is as follows:—Tear water, on its discharge from the lachrymal gland, at the upper and outer part of the front of the eyeball, descends by gravity, and is continually spread, in greater or less quantities, over its face, washing away impurities, and preserving its brilliancy; it is

then collected in the inner angle of the eye, and absorbed by capillary attraction into the puncta lachrymalia, the tube from which immediately discharges it into the lachrymal bag and duct, which, together, act like a syphon, and empty it into the nostril, where the constant passage of warm air causes its speedy evaporation.

We have now only to notice, in connection with the tears, a contrivance of great beauty for ensuring their discharge during sleep, when the lids closely embrace the eyeball. In our description of the structure of the lids, we mentioned that their edges were kept of their proper circular form by a cartilaginous hoop, called the tarsus. Now, it is found, on a closure of the lids, that the edges of the tarsus incline inwards, so that the lids touch each other only on the front edges, and leave behind them a triangular gutter, thus:—in which the tears run as smoothly as water in a conduit-pipe, to the puncta lachrymalia. Without this assistance, “nature’s sweet restorer, balmy sleep,” could only have been enjoyed with the daily penalty of sore eyes. Can any thing speak more strongly of HIM who has said, “that his goodness is over all his creatures?”



7. THE EYEBROWS.

The last defence which we shall notice is the brow. Man, the child of disobedience, daily suffers under a judgment in which, however, much of mercy mingles. He is the victim of *fatigue*, and in the sweat of his

brow he eats his bread. When labor exhausts and inflames the system, the forehead and temples usually perspire in great quantities, and on such occasions the eyes would have been in danger of irritation from the entrance of the "briny drops," had not the brows stood, as they do, immediately over them. The perspiration is caught in its descent, and held among the hairs of the brows, till it either evaporates, or is wiped away. Persons used to a town residence, or a temperate climate, can hardly conceive how useful the brows are, in this respect, to the husbandman and the *slave*.

DIFFERENCES OF EYES

All the works of creation are stamped with the characters of infinity. Each individual of the mighty whole stands as the focus of an ever-varying radiance, the generic type of endless specific differences. This truth, as we are about to show, is prettily exemplified in the variety of forms and colors which the glorious Creator has bestowed upon the human eye. In travelling from state to state of our native land, these differences must have engaged the attention of the most unobserving.

The varieties which these remarks present to our consideration, may be divided into those which are peculiar to nations, sexes, and trades, and are chiefly those which result from different modifications of color and form.

I. NATIONAL DIFFERENCES.

I. **COLOR.**—The differences of eyes, as a national distinction, are found to be very closely connected with the colors peculiar to the skin, and may, by a very broad generalization, be thus classed:—

1. Nations composed of people with *very white* skins, have usually *blue eyes*, gradating in some districts into all the varieties of *gray*. Persons with red hair have a greenish tinge upon the iris. Examples—Germans, Danes, Swedes, Dutch, British and Circassians.

2. Nations with *white* skins usually have *black eyes*. Examples—French, Poles, and generally the inhabitants of lower Western Asia, and Northern Africa.

3. Nations with *brownish-white* skins usually have *deep-hazel* colored eyes. Examples—Southern Europeans and Eastern Asiatics.

4. Nations with *olive* skins usually have *brown* or *dull-orange* colored eyes. Examples—Hottentots, Mongolians, and the tribes of Upper Asia.

5. Nations with *red* or *copper* colored skins usually have *reddish-brown* eyes. Examples—Aboriginal Americans.

6. Nations with *brown* skins usually have *blackish-brown* eyes. Examples—Malacca, and the islands of the Indian and Pacific oceans.

7. Nations with *black* skins always have intensely *black eyes*. Examples—The natives of Central Africa, New Holland, Van Diemen's Land, &c.

II. **FORM.**—National differences of form do not admit of being so distinctly classed as those of color; indeed, so little has been recorded on the subject, that we are only able to state a few brief particulars collected from the statements of the travellers, who, it is to be regretted, very commonly pass over the natural history of the countries they visit, and confine their attention to the mouldering walls of perished cities, and the personal oddities of their journeys.

Differences of form in the eye may be reduced to those which depend on size, situation, and the nature of the appendages.

1. **Size.**—The eyes of the temperate regions are usually large, and

those of the cold and tropical climates small. The eyes of the European, the Moor, and the Kalmuck, may be taken as examples of the former; and those of the Laplanders, the Esquimaux, the Hindoos, and the Negroes, of the latter.

2. *Situation*.—This character regards the distance of the eyes apart, the obliquity of their position, and the depth of their insertion. The whole of the Mongolian tribes, as the Chinese, Japanese, Tartars, &c., have the eyes placed at a considerable distance asunder, and the space between them very broad and flat. This is a very distinctive mark, and gives an expression of great heaviness and vulgarity to the countenance. The Esquimaux face is similarly characterized. Savage nations have their eyes placed obliquely, and not at right angles, to the nose. This is particularly remarkable in the American Indians, the Bushmen of Southern Africa, and forms a very marked contrast to the horizontal eyes of Italy, or, indeed, to those of any civilized people. The extremes of depth in the insertion of eyes may be found in the Cossacks, Russians, Australians, Moors, Jews, &c., which are very prominent, being placed in shallow orbits, and in the Malays, Hottentots, Dutch, and American Indians, &c., which are deeply seated, and protrude but little.

3. *The nature of the appendages*.—These vary so much, that we can only point to a few examples. The European eyebrow is thick and shaggy; that of the negro, thin and narrow. The eyelids of the former, light, and well-drawn asunder, exposing the ball, and giving an air of intelligence and generosity to the expression; those of the latter, large and heavy, particularly the upper one, which generally hangs half over the front of the eyeball, and very much debases the countenance. The inhabitants of snowy countries usually have large lids, which, from habit, are kept nearly closed. The Chinese have short lashes, with long openings to the lids. These, with a thousand little intermediate peculiarities, greatly influence the physiognomical character of nations, and, as we shall presently see, are also of great use in contributing to the formation of perfect vision under the peculiar circumstances of the countries in which they are found.

2. SEXUAL DIFFERENCES.

The eye of the male is, as might be expected, larger and bolder than that of the female, which is small, and delicately formed. The parts connected with the former are also characterized by a greater thickness, as well as by numerous lesser variations. In the male, the eyelids are more muscular, with a harder skin than is possessed by the female, in which latter sex they have less energy and greater smoothness. This imparts an air of great gentleness and timidity, with a degree of pensiveness, to the female eye, which beautifully distinguishes it from the bold and forcible expression of the same organ in man. The male brow is thicker, with a greater projection than in the female, owing to the increased size of the corrugator* muscles, which are so small in woman that she *frowns with difficulty*; the hairs of the brow are also thicker, coarser, and do not lie close to the skin, as they do in the female. In man, the upper lid is more elevated, so as to appear smaller; the fold is, therefore, larger and nearer the eyebrow than in woman. The openings between the eyelids are wider and rounder, the angles at the corners are greater, and the margin of each is broader. The eyelashes are thick, and

* The corrugator muscles are those which knit or corrugate the brows.

not so fine. Added to all this, the apparatus for secreting tears is less than in the woman, whose eyes are consequently more humid, and upon whose lids the tear of sensibility more often glitters. It is to this circumstance the mildness and brilliancy of a woman's eye is to be attributed. Man frowns upon his enemies, but his fair partner weeps over their hostility.

3. DIFFERENCES WHICH RESULT FROM THE PRACTICE OF PARTICULAR TRADES.

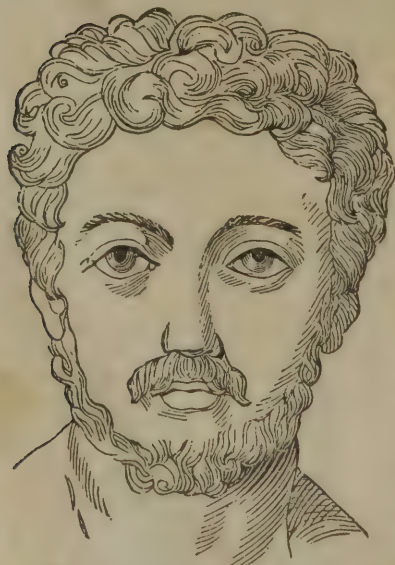
It may be questioned by some, whether these differences are sufficiently well marked and permanent to enable us to seize on any general characters for their indication. We think a moment's consideration of the effects which certain avocations have upon the bodily frame, would immediately remove such an impression; for if it be allowed that a porter grows more robust by the carriage of his loads, the sailor's hand more broad and clenching who sails in rougher seas, or the weaver's limbs more wan and wasted by his sedentary mode of life, we think it must be readily granted that so delicate an organ as the eye will undergo similar changes under similar affections. But let us point to facts.

The eye of a watchmaker, or any minute mechanist, has usually a prying, piercing expression, but seems restless in the performance of long vision. An astronomer, or any one in the habitual use of optical instruments, commonly has one eye strong and the other weak. This results from the habits such persons acquire of using one and the same eye continually, for their observations; and of directing their whole thoughts at the time to that one avenue of vision. The unused eye in this case becomes, in the course of time, half blind; and the symmetry of expression in the eyes is consequently destroyed. Sailors, from the constant usage of their sight to long distances, acquire a dull, flattened eyeball, and walk in the vicinity of near objects with a vacant apathetic look, which is very remarkable. Sweeps, engineers, pitmen, millers, and others whose professions oblige them to spend much of their time in the midst of dust, have very heavy lids, from the constant practice of keeping them half closed for defence; and a discolored cornea, occasioned by the irritation of the bloodvessels with dust. Compositors and engravers usually have a full eyeball, with the orbicular muscles well developed. The latter are remarkable for the strength of their eyes in old age, the effect of the constant and equal use to which all their parts are subjected. An industrious use of the eyes contributes much to the durability of their powers. Glassblowers have very protuberant eyes, while those of bakers are sunk and flat. The eyes of a soldier move with great quickness, the result of discipline, which shows itself as much in the private circle, as in the public ranks. In this way we might multiply examples, but our limits permit us only to add another. The eye of the industrious farmer, refreshed by fields of living green, unsullied by the smoke of cities, free from the demoralizing traits of trading flattery, but too often deadened by ignorance and hereditary prejudice, offers to our view, in favorable cases, the organ in its best state, open, strong-sighted, expressive and well defended.

In conclusion, we have only to remark on what appears to be the designs of the all-wise God in causing this great diversity in the forms and colors of the human eye and its appendages. But here we know so little, that in attempting only to conjecture them, we are in danger of "darkening counsel by words without knowledge." The designs of God, "like

his "commandments," are so "exceeding broad," that in stating them we can scarcely avoid placing limits to his illimitable wisdom, and of giving one reason, where a million really exist. With this acknowledgment, we may venture to believe, that one object to be attained by these differences, was, that one man might be distinguished from another; for had all eyes been alike, one great source of personal identity would have been destroyed. Another object may have been the perfection of human beauty, and the heightening of our enjoyment of it by the addition of interminable variety. 'The keenest appetite palls under sameness, and we all like our own possessions least—thus hath the Creator stooped to our indulgences. And a third reason, the last we shall mention, may have been, that each eye might be fitted to the temperament and circumstances of the individual. This is evidently true, as it regards nations, and the inhabitants of peculiar districts; and if God has so ordered it in the major case, is it not more than probable that his ordination extends to the minor, and especially where a self-apparent necessity for it exists? We believe that it does. 'The intense blackness of the iris in a negro, by absorbing the sun's rays, prevents that delicate instrument from being burnt. His eyelids are larger and thicker than the European's, and placed so as to give the eye the appearance of being buried deeply in the skin of the face; the hair of his head and body is every where short and woolly, but the hair of his eye lashes is long and straight, for the obvious purpose, in connection with the size of the lids, of shading the eye from the otherwise destructive brilliancy of the sun. For these reasons, and a thousand similar ones which we could adduce, we believe that the eyes of every man are especially adapted, by their own peculiarities, to meet his particular exigences, and to augment his joys.

EXPRESSION OF THE EYE,



[Head of Antoninus, from the Antique.]

The emotions of the soul are usually expressed by some corresponding motion of the body; and as the face is peculiarly fitted, by its structure and position, for the manifestation of such mental changes, it forms, in the honest man, a pretty accurate index of his feelings. But this capacity of expression resides chiefly in the eye; which, by its brilliancy, and the extreme delicacy and rapidity of its motions, as well as those of its lids and brows, is surprisingly endowed with the capacity of expressing most of the emotions and passions of the soul in the most impressive manner.

The eye is unquestionably the most essential feature of the human physiognomy. It lends the most indispensable charms to beauty, while at the same time it

may redeem the most hideous face. It is emphatically the "window of the soul." Into it we gaze for every token of love; there we read the answer to every sympathetic appeal, and then a close discernment may detail almost every movement of the internal machinery. It betrays the softness of piety, the mildness of benevolence, the cowering of guilt, the treachery of an evil heart, and the slumbering fire of the deepest passion. It develops the wildness of insanity, the phrensy of despair, and the gentle patience of hope. Again it displays the gaiety of the heart, and the lightness and freedom of the mind.



[Head of Nero, from the Antique.]

Poets, in all ages of the world, have celebrated in verse this eloquence of the eye, and have made us familiar with its more striking aspect; but none have been more successful in their delineations than those of England. Spenser, in describing the suspicion of one of those guilty minds which "fear each bush an officer," has these graphic lines:—

"Under his eyebrows, looking still askance,

His rolling eyes did never rest in place,
But walkt each where for fear of hid mischance."

And again, in his celebrated picture of Despair:—

— "his hollow eyne (eyes)
Look'd deadly dull, and started as astound."

Shakspeare's description of the "poet's eye in a fine phrensy rolling," will occur to every one; as also the address of Hamlet to the ghost,

"There is no speculation in those eyes,"

a line full of the most startling sublimity. But perhaps he has shown an equal power of imagination, with a broader degree of observation, in his lines upon sudden death:—

"But see, his face is black, and full of blood;
His eyeballs further out than when he lived,
Staring full ghastly, like a strangled man."

Milton's *Paradise Lost* abounds with the happiest allusions to this noble faculty. Thus, in a review of the infernal legions, we have the following portrait of their great satanic leader:—

— "his face
Deep scars of thunder had intrench'd, and care
Sat on his faded cheek, but under brows
Of dauntless courage, and considerate pride,
Waiting revenge; cruel his eye, but cast
Signs of remorse and passion, to behold

The fellows of his crime, rather
 (Far other once beheld in bliss) condemned
 Forever now to have their lot in pain."

Of Moloch, "the strongest and fiercest spirit that fought in heaven," it is said, on the termination of a speech—

—————"his look denounced
 Desperate revenge, and battle dangerous."

And again, on the issue of their deep, malicious councils, when it was determined—

—————"to confound the race
 Of mankind in one root, and earth with hell
 To mingle and involve"—

we read—

—————"the bold design
 Pleased highly those infernal states, and joy
 Sparkled in all their eyes."

We turn, however, with pleasure, from these "mighty combatants," to Adam, the object of their forceful subtlety, of whom it is said—

"His fair large front, and eye sublime, declared
 Absolute rule;"

a passage which finely illustrates our purpose, and designates the eye as the very soul of expression—the avenue through which the immortal spirit glows.

In the further development of our design, we may mention that Burns was a minute observer of the passions of the eye, and has left us some exquisite pictures of its tale-telling propensities. In his address to "Ruin," he says—

"With stern, resolved, despairing eye,
 I see each aimed dart."

There is an energetic truth in these lines which nothing can surpass. We turn, however, to our favorite passage in the Cotter's Saturday Night, where the sweet witcheries of love are thus betrayed:—

"The wily mother sees the conscious flame
 Sparkle in Jenny's ee (eye) and flush her cheek."

One can hardly help sympathizing with the "puir lassie's" confusion.

These quotations show how large a share the eye has in the production of beauty, and that which is its most fundamental property, expression. We shall, therefore, conclude this part of our subject, by an extract from a poet who was too much the victim of those soul-subduing glances, of which he was so charming a biographer. Byron, in his dedication of *Childe Harold* to *Ianthe*, has the following exquisitely descriptive lines:—

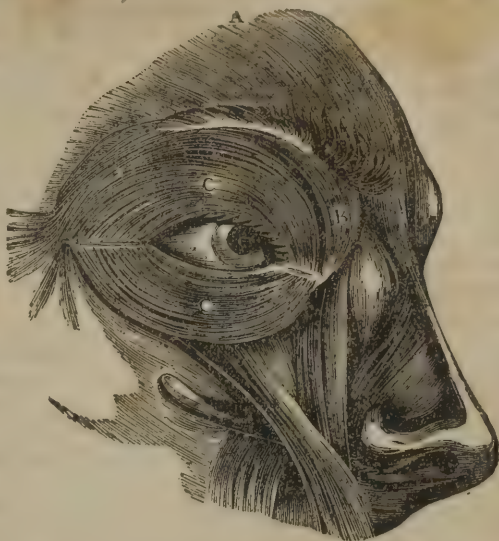
"Oh! let that eye, which, wild as the gazelle's,
 Now brightly bold or beautifully shy,
 Wins as it wanders, dazzles where it dwells,
 Glance o'er this page, nor to my verse deny
 That smile, for which my breast might vainly sigh,
 Could I to thee be ever more than friend:
 This much, dear maid, accord; nor question why
 To one so young my strain I would commend,
 But bid me with my wreath one matchless lily bend."

Expression, when limited to the eye, depends for its production upon

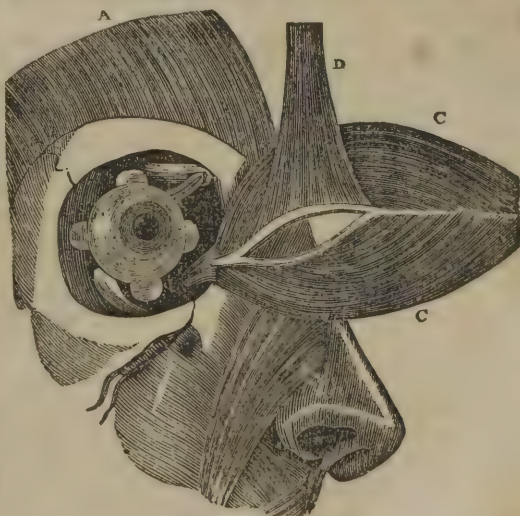
the action of four muscles, which we shall presently describe; the motions of the eyeball; the brilliancy of the cornea; and the luminous appearance which the retina assumes, whenever it suffers pressure from a sudden and superabundant influx of blood to its vessels.

On such occasions, that delicate organ actually gives out light, and a tender lambent flame seems for a moment to be suffused upon its surface. The same thing occurs in a more concentrated and brilliant form, when the retina is suddenly squeezed by a blow on the front of the eye; or it may be produced at pleasure, by slightly pressing the eyeball from within outwards, when the luminous appearance will be seen in the form of a fiery semicircle. This, as we shall see, has much to do in the expression of strong emotions. The muscles of which we have spoken, are the *occipito frontalis*, the *corrugator supercili*, the *orbicularis palpebrarum*, and the *levator palpebræ superioris*.

The situation of these muscles will be best understood from the cut. The use of the occipital muscle, A, is to elevate the brows; that of the orbicular, C, to close the eyelids; and that of the levator, to raise the upper lid, and open the eye. By a combination of these muscles in their action, it is obvious that an almost infinite variety of motions would be produced; and it



[Portion of the face; the skin and fat removed to show the muscles described in the text.]



[The same, with the orbicularis lifted up and turned aside, to show the levator in its natural situation.]

is, consequently, to this simple organization, our inexhaustible power in the indication of passion is to be attributed.

In describing the lineaments of expression, much time and ingenuity has been wasted by those writers who have made it their study to portray them, in vain attempts to classify them, and to reduce to simple rules those effects, which, in every degree, are so compounded, and so intimately related to each other, that the laws laid down for their separation, become only so many names for long lists of nullifying exceptions. It will be our care, therefore, to take untrammelled nature just as we find her, and, without confusing the subject by a useless endeavor to drill the differences of expression into regimental order, to content ourselves by the adoption of a plan, which shall show the principal passions in opposition to each other, and, by the effect of contrast, make their characteristic differences the more palpable.

1. TRANQUILLITY AND ASTONISHMENT.

In the expression of *tranquillity*, the eye and other features are in a state of repose; it is not, however, such a state of rest as betokens a want of feeling, or which characterizes a face of merely unintelligent prettiness; on the contrary, a susceptibility of expression lurks in the quiet eye, a slumbering energy rests upon the quiet brow, which proclaim the presence of a mind, tranquil, but not asleep, waiting, like the unruffled ocean, the loud lashes of rude winds, to call its latent energies into active existence. There is something very grand in the living and intelligent serenity which seems to swim in the eye of a great man in the calm hours of life.

The antagonist expression is witnessed when the placid eye, roused by some exciting spectacle, withdraws its lids, fixes the ball, enlarges the pupil, elevates the brow, and, all *astonished*, seems athirst to drink in all that can be known of the "great uncommon wonder" then before it.

Terror is that kind of feeling in which fear treads on the heels of astonishment; the only difference in the the expression as it regards the eye, is in a timorous relaxation of the fixed ball, which starts convulsively askance; and in an occasional glare of light from the excited retina. Its general effects are very well described in the following lines:—

"He answered naught at all: but adding new
Fear to his first amazement, staring wide
With stony eyes, and heartless hollow hue,
Astonished stood."

2. ESTEEM AND CONTEMPT.

When the eye looks graciously upon a valued object, the only difference between it and tranquillity is, that the lids fall, and, assisted by a suffused tear, give an expression of subdued lustre, which is highly captivating. Its counterpart consists in those blighting looks which tell the scorn of a proud man's heart. On such occasions, the lower lid is drawn up, and covers the under edge of the iris, the brow is arched and elevated, a sarcastic smile plays in little wrinkles round the angles of the lids, and the head being tossed backwards, the pupil is directed downwards, and looks, as it were, from on high upon the object of contempt.

3. DESIRE AND AVERSION.

When the soul is disturbed by strong emotions of desire, the eye, as the faithful herald of its feelings, immediately assumes a look of singular

intensity. An affectation of humility usually precedes its exhibition, and the moment for witnessing it in full action is, when, raising them from the downcast look of complimentary reverence, they are suddenly fixed on the subject of its wishes. The brows are knit, but drawn forcibly upwards, the lids nearly cover the ball, and the iris, shadowed by their closure, relaxes and enlarges the pupil, and the whole organ has a strained appearance, with a great deal in the expression produced, which might denote the most anxious curiosity. *Aversion*, in opposition to this, gives to the eye a dull relaxed expression, the brows seem heavy, and a sluggish frown slightly knits them together, the chamber of the eye seems to gather darkness, and the ball, directed downwards, moves hesitatingly from one object to another without appearing to see any thing.

4. LOVE AND HATRED.

The expressions which designate these passions are the same as the preceding, differing only in excess. Every lineament is more strongly marked. The most perfect examples are to be found in the works of the Italian painters. Pure ethereal love languishes in the eyes of their *Madonnas*; and hatred, intense in proportion to its injustice, bewilders the vision of their "Scribes and Pharisees."

5. VENERATION AND DESPAIR.

These, being strong affections, are powerfully told by the eye. Prayer has been said to be—

—— "the lifting of an eye
When none but God is near."

And it is in the exercise of that ennobling communion we have watched the eyes of the aged and the dying, and beheld veneration in its best and most striking form—the service of the ETERNAL. The eye, under the impulse of the venerating mind, opens broad and beautiful, and with all the stillness of advancing morning, turns itself slowly towards heaven, whose descending light dashes it with a beam of glory;—and thus gazing upon thin air, but "as seeing Him who is invisible"—worships. Despair, next to madness, is more strongly expressed by the eye than any other emotion. The burning brows are drawn convulsively together, the retina seems all on fire, the cornea bloodshot, the surface of the ball dry, and the lids swollen, inflamed, and half closed; degradation reigns; and as the fitful agony returns, the soul avoids the hated light, and seeks darkness to hide its misery.

6. LAUGHTER AND PAIN.

Laughter has been thus described by Sir Charles Bell, in his masterly *Essays on the Anatomy of Expression*, a work which we recommend to universal perusal. "Strongly marked wrinkles play about the eye, and by elevating the cheek, cause it to accumulate upon the eye. In this action, the orbicular muscle assists, while at the same time it presses back the eyeball, so that the eye is nearly closed, and peers through the tears which in hearty laughter flow, in consequence of the pressure of the lachrymal gland. The eyebrows are drawn down, but more generally their outer half is very much curved; while, in consequence of the elevation by which the effect is produced, their inner extremities are pointed downwards; and this is a turn of the eyebrow which never fails to give great drollery and archness to the expression." Pain, in its mildest de-

gree, is indicated by a drawing down of the brows, while tears of sorrow "gush from either eye," and the regular action of the muscles is disturbed by convulsive twitches which accompany the recurring pangs. These expressions change as the pain increases, and in moments of great anguish, the brows are violently elevated, the eyeballs stare with a wild delirious look, and strong sparkles of light are occasionally emitted from the retina.

7. CONFIDENCE AND JEALOUSY.

Confidence is near akin to placidity in its expression. Vision, however, seems to be more strongly performed, than when the eye merely reposes. An air of animation glistens on the eyeball, and very aptly portrays the open guileless trust of its possessor. Turn we now to "green-eyed" jealousy, that monster which "makes the meat it feeds on;" and here the agitated mind looks fiercely through the tremulous eye—all is perturbation. The eyelid is fully lifted, and the eyebrows strongly knit, so that the eyelid almost disappears, and the eyeball glares from under the bushy brow.

8. HOPE AND FEAR.

In the expression of hope, some vital impulse seems to leap cheerfully in the buoyant eye; the lids, the brows, and all the parts connected, have an open aspect, and change from grave to gay, from gay to grave, with a more than usual alertness, as the darling hope grows bright or dim by turns. Fear casts a sudden clog upon this elasticity; a shrinking of the parts takes place. The firm open brow suddenly contracts, the smooth expanded forehead becomes wrinkled, the lids collapse, and the eyeballs seem drawn into their orbits; but, upon a fresh accession of alarm, start suddenly forward, and are fixed, with a distracted stare, upon the affrighting cause.

9. SATISFACTION AND ANGER.

When a man is at ease in his possessions, he looks from his lap of luxury with a dosing air, his eyes are half asleep, and a leaden dullness droops upon their falling lids. But, when a good man, in the integrity of his heart, reflects on the widow relieved, the exiled patriot employed or the orphan boy apprenticed, a very different look beams in his eye, but still a look of satisfaction; a scanty tear washes away the stain of selfishness, the sight seems to look inwards, and a gentle smile gives life and beauty to the whole expression. Anger, a condemnable and atrocious passion, mars the whole countenance: its distinctive marks may be found in the head of the hyena; the brows are knit, the eyeballs protruded, with a timorous obliquity in their direction, and the whole aspect ugly and revolting.

10. INTELLIGENCE AND MADNESS.

The expression of intelligence may be defined as a promise of good things; the brow is slightly drawn down, bespeaking thoughtfulness; the ball is bright, and the white clear, betokening order and temperance; its motions are steady, proclaiming judgment and self-possession; and, finally, a tendency to smile declares urbanity and gentle breeding. Sir Charles Bell, in speaking of this expression says: "How fascinating, when compared with the insipid prettiness, and regular features of an inanimate beauty, is that susceptibility which lightens up the countenance, and plays upon the features of a woman of sensibility, even while she is unmoved by any particular affection."

Madness is various in its expression. In some, the vacant eye of the idiot, leering through a drowsy smile, tells the sad tale; in others, an eye red with weeping, and dull with imaginary cares, exhibits moonstruck melancholy; and, more sad than all others,

“ With burning eyes, which bloody strokes have stained,
Staring full wide, and throwing sparks of fire,”

declare the raving mad.

11. ECSTASY AND DEATH.

Violence of degree, in any of the pleasurable passions, may be denominated ecstasy. Thus, there may be an ecstasy of joy, of laughter, or delight; but in every case the effect would be the same in the eye. The ball would swim in the tear of happiness, the lid nearly closed, and the eye strongly compressed; the inner end of the brows drawn down, and the direction of the pupil upwards, so much so, indeed, as frequently to be lost beneath the upper lid.

“ But pleasure are like poppies spread,
You seize the flower, its bloom is shed:
Or, like the snow-fall in a river,
A moment white—then melts forever.”

These raptures have been known to melt the “fairy frostwork” of life, and death has supervened. In this melancholy change, a clammy dullness beclouds the once delighted eye; the living brow, tremulous with emotion, hangs low and flaccid; and the sightless ball, sinking into its rigid bed, marks in ghastly outlines the bony contour of the orbit. In cases less sudden, a look of bewilderment darkens in the eye, and as the poor sufferer raises himself for the last time, the eye turns from one object to another, with an air of anxious delirium, and seems to anticipate the next succeeding minute, when the worn out frame drops into the embrace of the destroyer.

THE SENSE OF HEARING.

The object of hearing is the perception of *sounds* in general; and as that faculty connects us more closely with the material world than sight, the consideration of the principles upon which it proceeds, and of the organs by which it is manifested, commends itself to our best attention.

Le Cat, in his *Physical Essay on the Senses*, very justly observes, that “life, deprived of sensations so useful as hearing, is a kind of premature death.” A deaf man is necessarily a dumb man, and who can compute his loss? His never-sleeping guard is dead, who warned him of a thousand dangers; and now the tread of the midnight thief, the crash of the falling tree, the screaming of the drowning child, or the mutterings of the coming storm, fall upon his ear as vainly as the tear of sorrow upon the brow of death. Who can compute his loss? The rejoicing melody of spring, the sweet echoes of the valley, the loud artillery of heaven, the voice of friendship, and the hallelujahs of the Sabbath are alike condensed into barren nothingness, and in the very excess of stillness, he even parts with the sense of silence.

Let a view of the sufferings of such a man, while it exalts the value of this precious sense, lead us to examine the natural history of our ears, and, in so doing, to acquaint ourselves with one of the most exquisite structures which the mind has ever yet been called upon to contemplate.

But it will be necessary, first, to consider briefly the phenomena of sound, and afterwards the structure of the ear, and the phenomena of hearing.

PHENOMENA OF SOUND.

The atmosphere is the great medium for the carriage of sound; but it is not, as the ancients imagined, necessary to its production; thus sounds may be made and perceived in water with much greater power than in the air. The Abbe Nollet, to settle this question, dived beneath the surface of some water, and struck together two stones which he held in his hands, when a shock was given to his ear which was insupportable, and which was felt on all the surface of his body, like that sensation which is produced when a solid body held in the teeth is struck by another solid body.

Sound, considered in itself, is, as far as human sagacity can trace it, the motion of an elastic fluid caused by the vibration of a solid body; this is heard whenever a blow or sudden shock is received by a body having communication by the air, or otherwise, with the ear.

Simple illustrations of this principle, are the notes of the sky-lark in mid-air, caused by the vibration of the vocal chords—the blows of a hammer in an immersed diving-bell, transmitted to the ear by the tremors of the water being communicated to the atmosphere, or the phenomenon of silent sheet lightning, in which case the electric explosion takes place at so great an elevation, that the air is too rare to convey a vibration, and consequently no thunderclap follows.

Blows given in rapid succession, to a sonorous body, produce sounds which run into each other, and as the apprehension of the ear is not quick enough to discriminate between them, one continuous sound results, varying in its tone according to the quickness with which the blows are repeated.

An expert drummer often repeats the blows of his stick in such rapid succession, that the individual beats, which, at a slower rate, could be distinctly heard, are now lost in a uniform rumble. It is the same in large factories, where the creaking of a vast number of wheels, and the shrill whistle of innumerable spindles, are all blended in one monotonous, whirling, whizzing sound, in which the elementary notes are perfectly indistinguishable. But the most common instances, are the tremors of a bell, or the vibrations of an elastic string. In the latter example, a long and slack string would vibrate so slowly that the separate percussions of the air would be distinctly audible. But let a string be gradually tightened, and its vibrations would progressively quicken, till the intervals between the separate sounds were lost, and a level stream of sound produced. This would be a proper musical note.

A note so produced would differ in its tone, accordingly as the vibrations of the string were greater or less in the same proportion of time. A slow vibration generates a low or grave note, and a quick vibration, a high or sharp note. In a violin, a harp, or any stringed instrument, these differences of tone are produced by differences of length, thickness, weight, or tension, in the strings.

The coincidence of such sounds at regularly recurring periods, constitute what are called harmonic sounds or concords. To make this plain, let us suppose a string to perform a certain number of vibrations in a given time, and another string to perform double the number of vibrations in the same time. In this case, the quicker string will make two vibrations for

every one of the slower; and, accordingly, every second vibration of the quick string will coincide, and sound in unison with the vibration of the slow string. A tone is thus produced which is highly pleasing to the ear. It is by combining and varying these harmonic sounds, according to certain fixed relations, that sweet melodies of music are produced. The soul seems to possess a deep sympathy with such uniting sounds, and under the darkest vicissitudes of human misery, they never fail to kindle again the dying spark of joy, and breathe a tender and delicious calm over the ruffled spirits. The ploughman varies the monotony of his labor by a cheering whistle; the fainting soldier grows strong with anticipated victory as the trumpet sounds; and the wayward, worldly thoughts of an assembled congregation, roll, with the solemn cadences of the organ, to oblivion. From Saul the evil spirit departed as David made melody to the Lord; and, it has been recorded, that the stern, relentless heart of Alexander, melted before a similar subduing influence.

"Hear how 'Timotheous' varied lays surprise,
And bid alternate passions fall and rise!
While, at each change, the son of Lybian Jove,
Now burns with glory, and then melts with love;
Now his fierce eyes with sparkling fury glow,
Now sighs steal out and tears begin to flow,
Persians and Greeks like turns of nature found,
And the world's victor stood subdued by sound!"

We have already hinted that the property of producing or conveying sounds is common to all bodies, solid or fluid; but in order that the ear may perceive them, it is necessary that the vibrations should be performed with great rapidity: no sound becomes sensible under thirty pulsations in a second. Noises are conveyed through solid bodies with greater quickness, and are heard better and from greater distances, than when they simply travel by the air. The scratch of a pin at one end of a log of wood, which cannot be heard by the person making it, is distinctly audible to another person placed at a distance, with his ear applied to the other end of the log. The sound of bells is conveyed by rivers to distances far remote from those in which their last faint notes are perceived on land. A bell rung under water has been well heard at a distance of twelve hundred feet, by a person with his head under the same body of water. And the ticking of a watch placed against the wall in the top room of a house, may be distinctly heard by an observer in the bottom room, the wall being the medium of communication.

The rate at which sound travels has been calculated with great nicety; and the first mathematicians now state it to be 1125 feet per second, at 62° of Fahrenheit, or a mile in about four seconds and a half. This may be roughly tested by comparing the pulsations at the wrist with the motions of sound—a gun at sea, for example, or a clap of thunder—each beat is nearly a second, and therefore indicates a distance of nearly a quarter of a mile.

The organ of hearing in many of the lower animals, is simply a cavity covered with a membrane, which, as it vibrates to the tremors of the fluid by which it is surrounded, gives to the creature a sense of the presence and nature of the sounding object. This simple structure grows more complex in the larger and more important species, till, in the human ear, we find the utmost variety and most exquisite combinations of all the forms of apparatus for the perception of sounds. Hence it becomes the

exclusive prerogative of man to enjoy the privilege of speech, the charms of music, and various other modifications of sound, to which ears less complex are insensible.

In considering the structure of the human ear, we shall begin from the outside and take the parts successively as they lie, and afterward regard them in their natural connection.

1. THE EXTERNAL EAR.

The external ear is an elastic cartilaginous cup for catching and conducting sounds to the internal ear. For this purpose it is very admirably contrived. Its surface is smooth and folded into grooves, which, assisted by a raised border, and several concave spaces, carry with unerring precision whatever sounds fall upon it, immediately to the passage of the drum. Its situation, also, on the side of the head, materially contributes to the effect. In a savage state men possess, in a limited degree, the power of elevating or bringing forwards their ears, in order to catch the sounds more perfectly in particular directions, but the hereditary domestic usages of civilized life have destroyed our command of this faculty. It is very remarkable, however, that in cases of injury to the internal ear, and consequent deafness, the patients have gradually recovered the power of moving their ears, and with it a portion of their lost hearing.



[The external ear, showing also the muscles by which it is moved.]

The external ear has been divided into a number of parts, to each of which names have been given. They are exhibited in the engraving.

A, the helix, or raised border of the ear; B, C, D, the antihelix, a triangular elevation of the cartilage; E, the scapha, a depression; F, G, the tragus and the antitragus: these little prominences act as guards, or keeps, to the mouth of the passage, and assist in preserving the sounds, on their entrance, from dispersion. H, the concha, or great cavity of the ear. The lobe of the ear is that part which is pierced for the ear-ring, and is useful in preventing the passage of a sound in the direction of the jaw, and is, besides, a very ornamental appendage.



2. THE TUBE OF THE EXTERNAL EAR.

This is called by anatomists the *meatus auditorius externus*, and is the passage through which sounds are conveyed to the tympanum, or

drum, which lies stretched across its inner end. Externally it is composed of cartilage, but internally of bone. It passes upwards and forwards, and then makes a slight turn to descend to the tympanum. The end of this tube always remaining open, it is necessarily subject to the entrance of many foreign and injurious bodies, as dust, insects and the like. Some protection was therefore indispensable; and here the great Creator, not less kind than wise, has, by the simplest means, so effectually obviated the difficulty, that this great thoroughfare, the ear, is constantly kept open, unsullied by dust, and, with the exceptions common to a failing existence, clear of all obstructions.

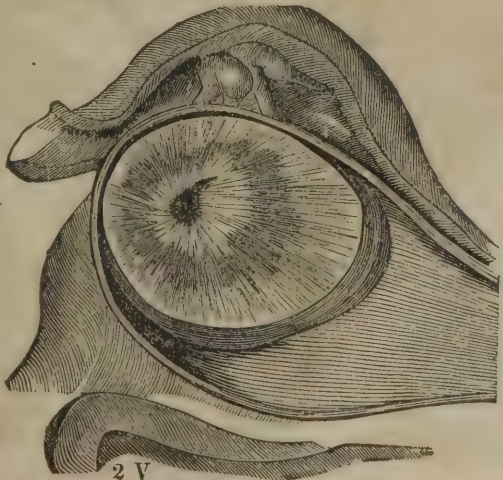


[General sectional view of the structure of the ear. *a*, the meatus auditorius externus; *b*, the tympanum; *c*, the malleus; *d*, the incus; *e*, the os orbiculare; *f*, the stapes; *g*, the semicircular canals; *h*, the cochlea; *i*, the meatus auditorius internus; *k*, the eustachian tube.]

The skin which covers the inside of the tube is set over with fine bristles, which converge irregularly towards the centre, and passing sometimes beyond it, interlace, and make the ear pervious to nothing but sound. Between the roots of these hairs a number of small glands are imbedded, called *glandulæ cerumenosæ*, whose office it is to secrete a bitter wax upon the surface of the tube, which being offensive to insects, shall either deter them from entering, or, in the event of their entrance, entangle them and prevent any further advance.

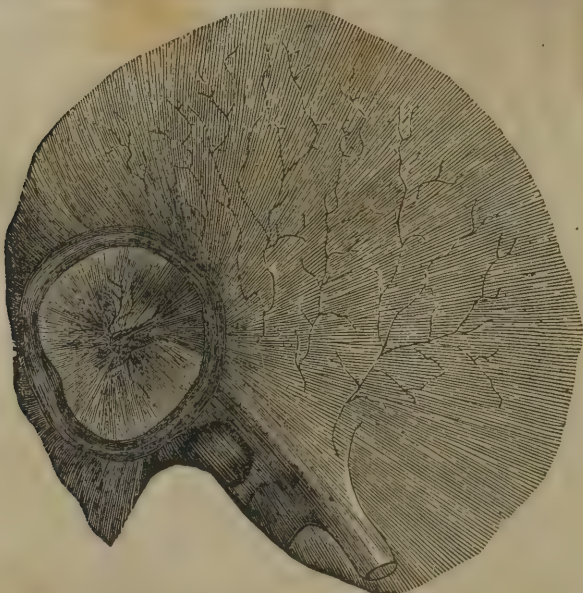
3. THE TYMPANUM.

At the inner end of the auditory tube, a membrane is stretched across the passage, which is called by anatomists the *membrana tympani*, and known to all persons as the drum of the ear. It is slightly oval in its circumference, but of a funnel shape, being deeply depressed at the centre, where, as we shall presently de-



[Drum of the elephant's ear.]

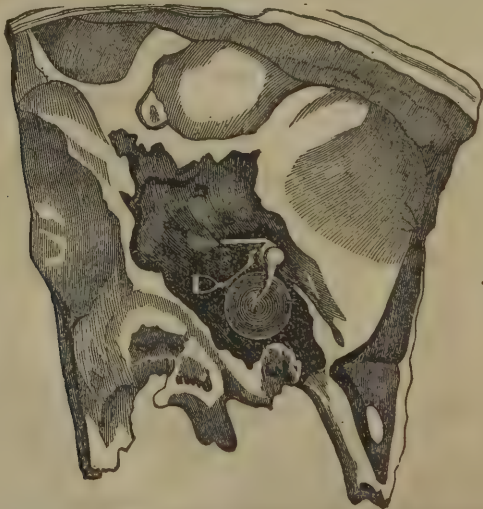
scribe, it is fastened to the end of a small bone. It is very thin, but supposed by Sir Everard Home, in opposition to Sir Charles Bell, to be muscular. In the whale, the muscular fibres can be distinctly traced con-



[A magnified view of the drum of the ear.]

verging to the centre. The use of the tympanum is to convey the vibrations of the atmosphere through the bones of the ear to the labyrinth

4. CAVITY OF THE TYMPANUM.



[Inside of the temporal bones, showing the cavity of the tympanum, with the drum and bones of the ear in their natural situations.]

Immediately behind the drum is a small irregular chamber, which contains the bones of the ear, and the openings to the labyrinth, and other parts of the organ. It contains no fluid, but is open to the air through the eustachian tube, as we shall, in its proper place, describe. It will be understood, then, that the external auditory tube is a passage leading to this chamber, and that at the circle where they join, the tympanum is expanded, and effectually separates the one from the other.

5. BONES OF THE EAR.

In the chamber of the tympanum are placed four of the smallest and most elegantly shaped bones of the body. Their use is to transmit the vibrations of the tympanum to the internal ear. They are named after the objects they represent, the mallet, the anvil, the orbicular, and the stirrup bones.

The mallet, or malleus, is named from its resemblance to a rudely formed hammer. It consists of a head, a neck, and a tapering body, with two processes, one from the thick end of the body, and a very fine one from the neck.

Malleus. Incus and orbiculare. Stapes.



[Bones of the ear.]

The anvil, or incus, so called from its similitude to a blacksmith's anvil. It consists of a body like the head of a double tooth, with two fork-like processes, one longer and finer than the other.

The orbiculare bone, or orbiculare, is the smallest bone in the body, and has been compared to a grain of sand.

The stirrup, or stapes, receives its name from its exact resemblance to a stirrup-iron. It consists of a minute head, a delicate arch, beautifully grooved within to give it greater lightness, and of a flat base, to which the feet of the arch are joined.

The connection and use of these bones will be described after we have completed our account of the remaining structures.

6. PASSAGES OF THE TYMPANUM.

From the descriptions and figures given, the reader will easily conceive that the bony cavity of the tympanum is a small chamber, having an opening on one side, closed by the drum, and containing the chain of bones already enumerated. Now, towards the inner side of the cavity, three holes or passages open, together with some smaller ones, which we shall describe.

1. The eustachian tube. This commences in a funnel-shaped aperture, at the back part of the mouth behind the palate, and passing backward narrows in its diameter, and opens by a small hole into the chamber of the tympanum.

2. The oval hole, or *foramen ovale*. This is an irregularly formed oval hole, situated nearly opposite the tympanum, and opening into the vestibule or central cavity of the labyrinth.

3. The round hole, or *foramen rotundum*, is placed in the side of the cavity, and leads into one of the scalæ of the cochlea. Besides these holes there are, as we have hinted above, several others of minor importance, which open into certain cavities in the substance of the bone form-

ing the base of the skull, and called the mastoid cells, *cellulæ mastoidæ*.

7. THE LABYRINTH.

The labyrinth is a collective name for three very peculiar structures, which constitute the internal ear, and in which the sense of hearing is produced. These are the *vestibule*, the *semicircular canals*, and the



[External view of the cochlea and semicircular canals, of the natural size.]

cochlea. The cavities we have hitherto described are filled with air and have a free communication with the atmosphere, but these contain an aqueous fluid, in which the auditory nerves are expanded.

8. THE VESTIBULE.

This, which forms a kind of antechamber to the semicircular canals and the cochlea, is a cavity of an oval form, covered with numerous hollows and pierced with many holes for the transmission of the branches of the nerves. It will be recollected that the oval hole forms a medium of communication between the vestibule and the tympanum.

9. THE SEMICIRCULAR CANALS.

When the vestibule is cut open, five circular holes are seen, which are the mouths or openings of the semicircular canals. These canals are delicate bent tubes of bone, so small that the head of a pin will fill one of them; they are distinguished by the names, the *superior*, or vertical, the *posterior*, or oblique, and the *exterior*, or horizontal. The posterior and superior run into each other at one end, and open into the vestibule by one common orifice, which accounts to the reader for there being only *five* instead of *six* openings, as he might have supposed.

10. THE COCHLEA.

The cochlea is one of the most curious pieces of apparatus in the body,



[Section of the cochlea. A, the modiolus; B, lamina spiralis; C, scalæ cochleæ; D, infundibulum.]

and, from its complicated structure, is so difficult to describe, that it will be best understood by reference to our figures. It consists of a central pillar of spongy bone, called the *modiolus*, round which is wound a spiral chamber, which, making two turns and a half, narrowing from the base to the apex, is called collectively *scalæ cochleæ*. This is divided throughout its whole length by a thin plate of bone, called the *spiral lamina*, *lamina spiralis*, and, of course, forms a double winding passage round the central pillar. At the apex of the cochlea, these two passages open into one, and together with the termination of the modiolus form a small chamber called the *infundibulum*. At the base of the cochlea, one of

these spiral passages opens into the vestibule, and the other into the tympanum, by the foramen rotundum.

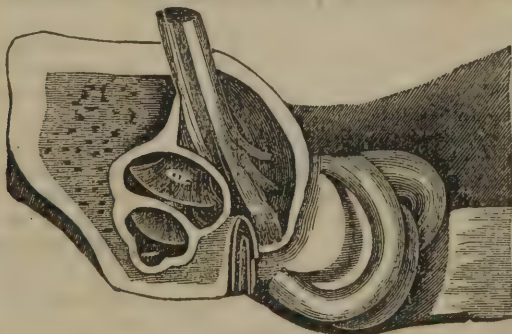
11. THE INTERNAL AUDITORY PASSAGE, OR THE MEATUS AUDITORIUS INTERNUS.



[Distribution of the nerves in the semicircular canals.]

12. MEMBRANES AND FLUIDS OF THE LABYRINTH.

The vestibule, semicircular canals, and cochlea, are filled with the most delicate membranes, disposed in minute bags and tubes, which articulate and interlace each other, and are filled with various watery fluids.



[Distribution of the nerves in the cochlea, magnified.]

13. THE NERVES.

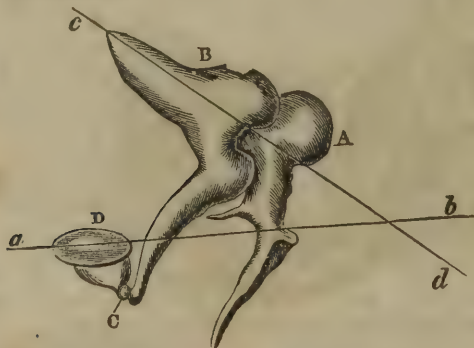
The nerves of hearing, called by anatomists the seventh pair, enter the ear by the internal auditory passage, and are spread in beautiful ramifications upon the membranes in the labyrinth.

We shall now describe the connection of these several parts, and the manner in which they discharge their important functions in the production of hearing, and trace the progress of sounds from one structure to another, till their final perception by the mind.

Let us imagine the Swiss soldier, far from his native land, suddenly aroused from the dull monotony of his duties by the sound of the *Rans des Vaches*, that simple melody which never fails to call up the associations of home so strongly as to induce him to quit his post and return to his family. What is his first emotion? He turns an ear in the direction of the music and stands as still as death. The body, by its disquietude, disposes itself to an undisturbed reception of the sounds, and this is done

by an instantaneous sympathy between all the parts of our complicated system. An ear thus placed collects the atmospheric tremors, and converges them into the auditory passage, and through it to the membrane of the tympanum. Against this, (the drum of the ear,) the musical tremors strike, and cause it to vibrate in accordance. These vibrations are immediately communicated to the chain of bones which lie behind the membrane; and, by a beautiful mechanical operation, they are then increased or diminished in their intensity, according as the sounds are too low in themselves to be heard distinctly, or too high to be borne with pleasure.

To comprehend the mode in which this is performed, it will be necessary to consider the connection and function of the four bones which we have already described, and which the reader will now be pleased to read again. The end of the long handle of the malleus is fastened to the centre of the tympanum, and is destined immediately to receive the vibrations of that membrane. The head of the malleus is joined to the body of the incus in such a manner that the vibrations of the malleus are considerably magnified in their passage through it. In fact, the two bones act as a compound-lever, in which, while one end moves at one speed, the other moves at three times the rate, or more, as the case may be. It is, however, quite impossible to convey a clear notion of this contrivance by words only, and we therefore beg a close inspection of the following figure, which represents the chain of bones in their natural position.



[Bones of the ear, magnified. A, the malleus; B, the incus; C, the os orbiculare; D, the stapes; *a, b*, a line representing the centre of motion of the malleus; *c, d*, the centre of motion of the incus.]

In this view, to quote the words of Sir Charles Bell, "we see that the head of the malleus is so articulated with the body of the incus, that the centre of motion of the incus is in a line drawn through the centre of its body, and consequently, that the extremity of the long process, to which we see the os orbiculare and stapes attached, moves through a greater space than that which receives the impulse of the head

of the malleus. Thus a very small degree of motion, communicated by the head of the malleus to the body of the incus, must be greatly increased in the extremity of the long process of the incus, and, consequently, this mechanism of the bones essentially assists in giving strength to the vibration which is transmitted inward to the great seat of the nerve."

We have frequently tested this adaptation of the ear for the perception of the lowest sounds in the following manner, and have received very high gratification by the result:—In the stillness of a summer's day, when it is usually considered that all sounds are at rest, and when indeed they are so to a common observer, we have sat ourselves down by a hedge, closed our eyes, and listened to the silence. Immediately thousands of

miniature melodies have peopled the empty void, and the very silence has become eloquent. The trill of the butterfly's wing, the notes and peculiar noises of multitudes of insects, the vibrations of a leaf, and the low gratulatory notes which loving birds emit, all became distinctly audible. Indeed, we have almost fancied we could hear the unfolding of the buds and flowers.

The kind Creator does not, however, stop here; for as we might have been incommoded by the inability to perceive very low sounds, so also we might have suffered from loud, sudden, or piercing ones; but for all these he has made complete provision. In the case we have described, the object to be attained was the *increase* of sound, but in that which we are about to explain, the end is to *diminish* it. This is effected by a combination of *two* very simple operations; first, by a relaxation of the tensity of the tympanum, just as we would slacken the string of a bow; and, secondly, by abridging the amount of leverage in the bones. The immediate agents in producing these changes are four little muscles: the first, which is called the *tensor tympani*, is fastened into the body of the malleus, and by pulling the long handle of that bone, draws the tympanum inward, and, of course, tightens and prepares it for the reception of low sounds; but when a sudden irruption of sound shakes the air, the contrary effect is produced by a relaxation of the muscle, and the tympanum, loosened from its grasp, becomes comparatively flaccid, and in that state transmits a deadened, muffled impression of the offensive noise to the brain. But to ensure an immediate and sufficient relaxation of the tympanum, it has not been left to the action of this muscle alone; a second one has been added, called the *laxator tympani*, which arises from the temporal bone, and is inserted into the handle of the malleus, and at once pulls it forward, and of course aids, while it ensures, the desired alteration. A third muscle is also inserted into the malleus, and a fourth into the stapes, and, by their joint action, modify the degree of motion in the bones, and limit the quantity of sound which they transmit.

Our readers will now have traced clearly the progress of a sound to the stapes, the last of the chain of bones, which they will please distinctly to observe is placed accurately upon the foramen ovale, or oval hole of the labyrinth, in the same way as a seal rests upon its impression. When it has reached this point the oscillations of the bones are given off to the membrane, which, like another tympanum, is stretched across the oval hole, and from it communicated to the fluids which fill the vestibule. The tremors in the labyrinth are then carried in an undulating wave through the semicircular canals, and thence into the spiral passages of the cochlea, in both of which, it will be remembered, the auditory nerves are expanded, and which now receive the aerial vibrations and communicate them to the brain.

But the function of hearing is not yet complete: the walls of the labyrinth being composed fully of bone, some contrivance is wanting to get rid of the vibrations after they have struck the nerves. In the cavity of the tympanum we observed that *two* holes communicated with the labyrinth, the foramen ovale, or oval hole, and the foramen rotundum, or round hole. The latter of these answers this important purpose. When the sounds have done their office, and reached in the scala of the cochlea, the end of their journey, they collectively strike against the membrane which closes this hole, and are given off to the air in the tympanum. Now, it will be remembered, that we mentioned a third aperture in the

tympanum, communicating with the mouth through the eustachian tube; and as the air in the tympanum by this means is enabled freely to interchange with the atmosphere, it is at the same time enabled easily to dissipate the wornout sounds which it receives from the foramen rotundum.

Thus is the sense of hearing made complete; and thus is man blessed by his Maker with the power of perceiving upwards of twenty thousand simple sounds:—a glorious alphabet! which we may be allowed to say, should never be prostituted to any lesser use than its GREAT AUTHOR'S PRAISE.

THE SENSE OF SMELLING.

Smelling is more simple and limited in its offices than any of the other senses, and contributes more to the luxury of life than any thing which might be regarded as directly necessary to its existence. It may be briefly defined as that faculty by which the mind is enabled to perceive the effluvia of bodies, and by it to infer their presence or judge of their peculiar qualities. In the larger animals, its power would seem to be proportioned to the strength or weakness of the sight, modified, also, by the peculiar wants of the animal. Thus, in the bat tribe, whose sight is weak, the organs of smell are developed in an extraordinary degree. The mole, also, which is nearly blind, has very strong powers of smell. To this it might be objected, that the family of hounds, and "wild beasts" in general, both smell and see with equal degrees of strength; but we answer, that although their visual powers may be strong, the perfect scent which they possess is necessary, because their prey is, in almost all cases, either hidden or beyond the range of sight. Smelling may, therefore, be regarded as a sort of a handmaid to sight; and, in the case of man, it gives a finish and beauty to his visual perceptions, which those who have inhaled the fragrance of a clover-field, when

"Vernal showers awake a rich perfume,"

will be very ready to acknowledge.

We have said that smelling is the perception of the effluvia of bodies by the mind. Let us now consider the subject more minutely in the following order:—first, the objects of smell; second, the organs of smell; and third, the mode in which smelling is performed.

1. THE OBJECTS OF SMELL.

As far as human research has proceeded, it would appear that *all* substances, whether of a solid, fluid, or aerial form, are composed of particles of matter in different degrees of cohesion; and that these particles admit of division again and again, till all known powers of separation are at an end, and thought perishes in the attempt to follow them to the threshold of infinite littleness. A few examples will make this plain:—

One thousandth part of a grain of tallow burnt in the flame of a candle for *one moment*, would illuminate a circle of four miles diameter, so as to be distinctly visible to persons placed in every part of it. Let the tropical seas cast a putrid body upon the shore, and in a few minutes a company of vultures will emerge from the distant horizon, and, spanning the heavens straight as an arrow flies, fall directly upon it. Drop a grain of carmine into a gallon of water, and every portion of it will be visibly tinged with the color.

In all these cases matter has been infinitely divided, and it is to such

a division of the constituent atoms of bodies, that the production of the effluvia we have mentioned is to be traced. We shall, however, quote a few more examples:—

Voyagers can usually *smell*, at the distance of hundreds of miles, the coast they are approaching. Negroes are said to be capable of distinguishing the track of an European by the *scent* of his footsteps. A grain of musk will perfume a chamber for twenty years without losing, in a sensible degree, any of its weight. And flowers, “colored for the sight, perfumed to *please* the smell,” are commonly distinguished amid a thousand others by the odors they emit. These constitute the most striking as well as the most pleasing objects of the sense of smell.

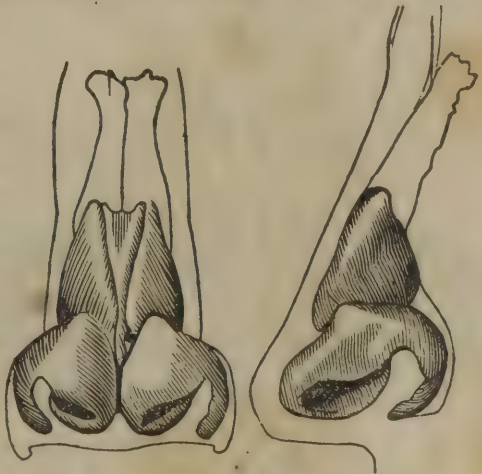
Now, in all these instances, we perceive that the cause of the sense, or that which excites it, is a subtle effluvia, or cloud of atoms, parted from the perfuming objects and carried through the air. And thus, when the

“Lavish stock, which scents the garden round,”

pours upon our senses, redolent of sweets, bright thoughts of innocence and purity, let us not be contented with merely reasoning upon the effect, but let us, wafted on the “breath of nature,” reach after the great Cause, the glorious God who designed them for our enjoyment, and who, himself taketh delight in the sweet incense of Israel.

2. THE ORGANS OF SMELL.

The organs of smell are situated in certain intricate passages and chambers, to which the nose forms the external entrance. The external nose is composed of bone, cartilage, and the common integuments. The bones are two, of an oblong shape, and are situated between the eyes and the cheek bones. They are called the *ossa nasi*, and form a sort of bridge, which, by its solidity, protects the tender structures beneath, and, by its projection, assists very materially in catching the rising odors. Internally, the passage which these bones form is divided into two by a thin bony partition, called the *septum narium*. From the bones several cartilages are suspended to form the flexible end of the nose. Thus we have two openings for the admission of scents, and in the way in which



[Front and lateral sections of the nose.]

this is accomplished there is much to admire. Had the *ossa nasi* been continued, and the end of the nose formed of bone instead of cartilage, we could scarcely have lived a month without breaking it; and the comforts of a “pocket-handkerchief” would have remained wholly unknown. We should also have been without the power of regulating the size of the nos-

trils to the circumstances in which we might be placed; but as it is, we can dilate, or partially close them, according to the rate we breathe, or the sweetness or not of the odors by which we are surrounded.



[Front view of the nasal fossæ.]

nose, which is the most natural mode of performing that function. Breathing through the mouth is almost peculiar to man.



[Nasal fossæ seen from behind.]

The nostrils enlarge as they proceed inward, and lead into many curious cavities and winding passages, formed by what are called the *turbinated bones*, and those of the face and base of the skull. After a number of convolutions, these passages finally emerge into a larger opening over the top of the throat, and communicate with the mouth. The arrangement enables us to breathe through the

The surfaces of this miniature labyrinth of bones are closely covered by a membrane, called the *membrana schneideriana*, or the mucous or pituitary membrane. This is the immediate seat of the sense of smelling; it is of a thickish spongy structure, very red, and carries in great abundance the filaments of the *olfactory nerve*, whose larger branches enter the inner nose through a number of holes made for them in the ethmoid bone. It is covered with a vast number of minute glands, from which a mucous secretion is constantly and copiously discharged.

3. THE MODE IN WHICH SMELLING IS PERFORMED.

The air, loaded with the effluvia of bodies, is carried by the act of breathing through the nostrils into the passages of the internal nose, where the odorous particles are entangled, and, adhering to the mucus on the surface of the pituitary membrane, are dissolved, and coming into contact with the nervous tissue, the mind is immediately impressed with the sense of their presence, or, in common language, smells them.

Thus far we may go, but no farther; for how the nerves convey this intelligence, and by what means the brain is enabled to receive it, are secrets, which, as they are known to God only, may justly be expected to humble our pride and exalt our adoration.

In closing our remarks upon this sense, we may point to the design exhibited in so cautiously placing the organs of smell in the great avenue of breath, as a guard to the lungs; and also in placing the apertures of the nostrils perpendicularly over the mouth, as a protection to the stomach. By these means, bad air and improper food are detected and avoided, and the most important functions of life, eating and breathing, are discharged with a confidence in which suspicion rarely mingles.

THE SENSE OF TASTE.

The sense of taste is one that adds more largely to the enjoyment of life than perhaps any of the others: hence the great misery of a fever results from its total loss. Like smell, however, it is the most transient in its impressions.

We need hardly say, that the organs of taste are situated in the mouth and tongue. They consist of a number of minute nervous papillæ, which, on coming into contact with the sapid juices of a body, perceive its flavor.

The tongue is a bundle of muscular fibres, sparingly intermingled with fat and cellular membrane, covered with a thin expansion of the common skin, and carries the branches of the gustatory nerves. On its upper sur-



[A portion of the tip of the tongue, highly magnified, showing the papillæ]

face papillæ, differing in structure and office, are spread. Those on the middle and base, or root, are comparatively large, and of a mushroom shape; and those on the *tip* and *sides*, smaller, more numerous, of a brighter red color, and in form like a pin's head, with a shaft wrapped in a white sheath. The former are little glands for secreting a portion of the saliva with which the mouth and food are moistened; and the latter are those which possess the exquisite faculty of perceiving the peculiar flavors of bodies. These papillæ are seated in the true skin, and are covered by the reticular tissue and the cuticle: and by the aid of a very powerful microscope Sir Everard Home discovered that each one of them contained several *nervous filaments* and many bloodvessels.



[An upright section of one of the papillæ of the tongue, very greatly magnified, and split open to show the nerves (engraved white) and the bloodvessels (black.)]

The process of taste is as follows:—when a morsel of food is received into the mouth, it is first touched by the tip of the tongue, and brought into close contact with the papillæ; when, if it be of a juicy nature, its taste is at once perceived; but if it be dry and solid, it is carried to the back of the tongue, moistened with saliva, which thus becoming impregnated with its flavor, and flowing over the sides of the tongue, gives to the papillæ a perception of the savory juices.

The inner sides of the cheeks and the roof of the mouth have a few of the tasting papillæ scattered upon their surfaces, and slightly assist the function. It is owing to this that a boy who lost his tongue still continued to taste.

THE SENSE OF TOUCH.

Without the sense of touch man would be a mere machine: it belongs to every part of his physical system, and is the basis of all the others. We shall confine ourselves, however, to its *superficial* operations, and describe only the sensibility of the skin to external impressions.

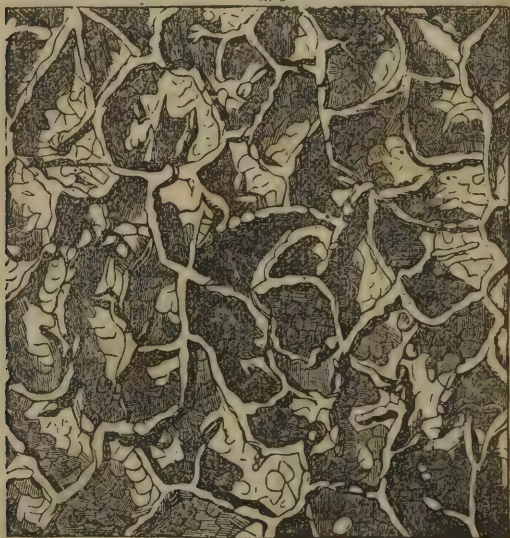
The qualities with which we become acquainted by its exercise, are, *hardness, softness, figure, motion, extension, heat, and cold.*

In explaining the structures adapted to this sense we must first give an account of the structures of the skin.

The skin is not, as is commonly supposed, a simple covering, but composed chiefly of three layers, easily separable, and having each a distinct structure and use; namely, the cuticle, the reticular tissue, and the true skin.



The cuticle is the first, or external layer, and is that which is raised by a blister. It is thin, transparent, and *insensible*, and serves to protect the more sensible parts beneath it, and to shield them from the too acute impressions of heat, cold, and the like. It is pierced by the hairs, the mouths of the perspiring and absorbing vessels, and by the ducts of the skin.



[A portion of the reticular tissue of a white person greatly magnified.]



[A portion of the reticular tissue of a black person, greatly magnified, and showing a particle of the black pigment, upon which the color of the skin depends.]

The reticular tissue is the second layer, and lies between the cuticle and the true skin. It is of a soft mucous structure, interlaced with little fibrous threads, and admirably protects the sensible surface of the true skin, and gives a great pliability to the general surface of the body. It is the seat of color in the negro; a circumstance which, as we have elsewhere described, is caused by the secretion of a black pigment.

The true skin is the third and bottom layer. It is a firm elastic membrane, and bears upon its surface a number of glands and *villi*, of short threads like the pile or threaded surface of velvet. By its strength and elasticity, it defends the body from injury; by its glands the important functions of perspiration and absorption are carried on, and by its *villi* the sense of touch is produced. These *villi* of the skin contain the sensible extremities of the cutaneous nerves, and

perform the sense of touch in the same manner as the papillæ of the tongue do that of taste. They are plentifully distributed over the whole surface of the body, but abound mostly on the tips of the fingers.

Before leaving this sense, we shall point out a few examples in which it is exhibited in its greatest perfection. Many years ago, a celebrated *blind* organist was famous as a keen player at whist! In the Boston *blind* Asylum the unfortunate inmates practice successfully a variety of trades, and make mattresses, mats, &c. And it is on creditable record, that a *blind* gentleman once made a *loom*, and worked for amusement as a weaver. But more remarkable than all, *blind* persons have been known to distinguish colors by the touch. In these cases, the sense of touch, by practice, becomes so exquisite as not to require the directing aid of sight. It is the same power which safely guides the somnambulist over house-tops, maintains the dreadful poise of the rope-dancer, enables the blind man to read with his finger his embossed letter bible; and which, on a *foggy* night, makes that the safest coach which is drawn by *blind* horses.



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